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## ABSTRACT

This document presents a detailed review and index of post-1960 modeling-imitation research relevant to the development and education of children. Each research study is described in terms of purpose, independent and dependent variables, task and procedures, model and subject characteristics, materials and results. In addition, an overall model is used to cross-index studies on several of these dimensions and to provide a visual summary of the focus and direction of research on modeling. It is observed that two topics which are extremely important to educators when considering research results have been heretofore unreviewed: characteristics of the child (e.g. age, socioeconomic status, and ethnicity) and conceptual characteristics of the learning task. The importance of recent studies on imitative learning of rule-governed behavior is also noted. (MS)

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REVIEW AND INDEX TO RESEARCH ON  
MODELING AND IMITATION RELEVANT  
TO THE DEVELOPMENT AND EDUCATION  
OF CHILDREN

by

Barry J. Zimmerman

Presented to  
National Program On Early Childhood  
Education, CEMREL, INC...

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Barry J. Zimmerman

August 1972



## INTRODUCTION

Ever since the dawn of recorded history, man has been acutely aware of the paradigmatic influence of human behavior. Social scientists have offered many descriptive accounts of how parents, other adults, and even other children demonstrated for and instructed each generation of children in the social and work skills of that culture. Despite this rather universal recognition of the influences of modeling, there has been practically no good research on this topic until recently. While early psychologists of note (e.g., Thorndike, 1913; Baldwin, 1906) often debated alternative explanations for imitative phenomena, practically no one attempted to verify his intuitions with research. One exception to this general trend was the pioneering work of Neal Miller and John Dollard (1941) at Yale. While the research of these men was rather limited in scope (essentially focusing only on matched dependent behavior), their experimental work established the modeling-imitation process as a legitimate phenomenon for psychological study. This initial effort triggered greater scientific interest in the socialization process particularly by child or developmental psychologists. The research efforts of these men and women tended to be rather large-scale, diffuse (nonbehaviorally defined), and descriptive in nature. Their data (which was generally correlational in nature) reaffirmed the general importance of the social forces operating during development, but failed to offer detailed insight into the modeling-imitation process.

This situation was abruptly changed with the outset of Bandura's important research on this topic around 1960. Bandura's careful operationalization of modeling variables, his unwillingness to conjecture in the absence of data, and his penchant for a controlled experimental methodology greatly influenced the direction and character of subsequent research efforts. Thus, the year 1960 marked the beginning of carefully controlled experimental research on the topic of modeling, and the number of studies on this topic has grown geometrically ever since this date.

The present study is a review of the modeling-imitation research which has been conducted after 1960. There has been one recent review of the modeling literature by Flanders (1963). However, because of journal constraints, this review necessarily had to be discursive in presentation and could not detail each study on the basis of topics such as independent and dependent variables, precise descriptions of the task and procedures, and subject characteristics. Accordingly, it was not possible to cross-relate research studies on the basis of these topics in a systematic fashion. The present review attempts to review in detail each article on the basis of these topics. In addition, an overall model is used to cross-index studies and provide a visual summary of the focus and direction of research on modeling. Two topics which are extremely important to educators when considering research results are the characteristics of the child (e.g., age, socioeconomic status, and ethnicity) and the conceptual characteristics of the learning task. Flanders did not address these issues in his review. Recent research has revealed the importance of such a characteristic

as the child's age in influencing his response to a model (Coates & Hartup, 1969). Before 1963, there was very little research on imitative learning of rule-governed behavior. Since this time, a large number of studies have been addressed to this issue which have not been reviewed anywhere yet. Since much of the school curriculum for children is devoted to teaching conceptual rule-governed responses, these studies would be particularly relevant to classroom instruction.

## PROCEDURE

Before the actual search of the literature was begun, it was necessary to establish selection criteria and a set of procedures for reviewing and reporting relevant documents. The selection criteria consisted of the following:

1. Experimental studies designed to assess the influence of a model's behavior on that of an observer.
2. Experimental studies which employed human subjects of 16 years of age or younger. On several occasions we reviewed studies using adults simply because of the importance of the study and its potentially applicability to children.
3. Quasi-experimental studies of a child's ability to imitate as a function of his age level.

This review was directed at discovering and summarizing conclusive research on modeling-imitation phenomena. This level of research quality requires an experimental or at least a quasi-experimental design (Campbell & Stanley, 1963). Text book accounts theoretical discussions, and reviews were treated as secondary sources and important conclusions were accordingly traced to the primary source of the research. It was these original studies which were resumed.

The procedure adopted for annotation was an attempt to include all of the pertinent information necessary to give the reader a comprehensive overview of the particular study. A standard index entry for cross-indexing was developed which consisted of the following:

AUTHOR

The listed author or authors

TITLE	The title of the study, text, or thesis.
SOURCE	The location of the original source document. In the case of a journal article, this was the name of the publication in which it appeared. In the case of a book, this was the publisher.
PURPOSE	The major question or issue that the study addressed.
SUBJECT CHARACTERISTICS:	The individual characteristics of the observers in these studies such as age, ethnicity, etc.
MODEL CHARACTERISTICS:	The individual characteristics of the models in these studies such as his age, whether live, on tape, etc.
INDEPENDENT VARIABLES:	The variables which were manipulated or controlled by the experimenter.
DEPENDENT VARIABLES:	The responses of the observers that were altered as a function of viewing the model.
MATERIALS	A description of the task that the model and the observer performed on.
PROCEDURE	A detailed account of the operating procedures that were involved in the conduct of the study.
RESULTS.	A brief description of the obtained results and summary conclusions.

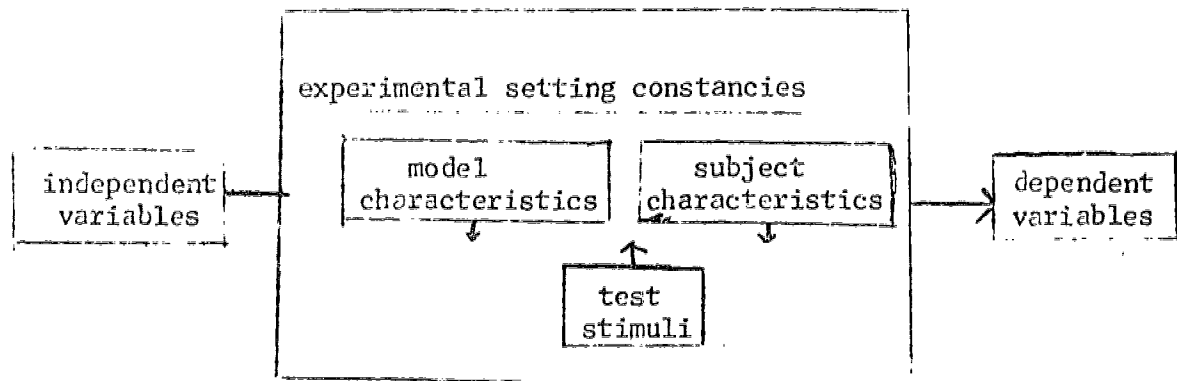
All entries were assigned an identification number which was used for cross-referencing purposes.

## RATIONALE FOR THE SUMMARY OF RESEARCH ON MODELING AND IMITATION

In order to summarize the large body of research on modeling and imitation, we have developed a generalized model which can be used to interpret the findings of individual studies and which provides insight into the cumulative "knowledge" in this area. This model was comprised of a logically organized set of mutually exclusive categories into which individual studies could be placed. Hopefully, this overall scheme could suggest relationships between findings, point out strengths and weaknesses of research to date, reveal new areas where research is needed, indicate the relationship between methodologies and obtained results, and in general, present a comprehensive overview of the state of knowledge in a given area.

With regard to modeling-imitation research studies, several general factors must be considered: independent variables that were manipulated or controlled, dependent variables or the type of response altered during the study, and experimental constancies such as model characteristics, observer characteristics, and the type of task stimuli. These factors are visually depicted in Table 1.

Table 1  
Review Model



### Independent Variables

Social learning research can be organized around 15 different types of independent variables--of which modeling is the most important for the purposes of this review. Several of the important independent variables also appear as situational constancies as well. This occurred because they were systematically manipulated (usually through selective assignment) in some studies but were held constant in other studies.

These independent variables are presented below:

1. Modeling- any group of stimuli which function as a paradigm, an example, or pattern which alters the observer's subsequent response. Usually this involves a social being who would demonstrate selected kinds of behavior for the observer to learn.
2. Reward and punishment- the application of contingent social reinforcement, incentives, or disapproval to a model or an observer to motivate or deter particular responses.
3. Model characteristics- refer to innate and ascribed parameters of the model such as ethnicity, age, sex, nurturance, power, status, etc.

4. Instructions- refer to specific directions which are given to the observer before or after the model performed and usually are designed to constrain the observer's behavior.
5. Social context- the social climate of the experiment, such as a "party" or "neutral" atmosphere.
6. Feedback- refers to information given to the observer or model regarding the accuracy of a previous response.
7. Cueing- involves any stimuli which serve to direct attention to certain parts of the model's response or aid in prompting an observer's imitative responding.
8. Sex- sex of the model or observer.
9. Verbalization- refers to verbal description responses of the model's behavior by the experimenter, model or observer. The emphasis here was on coordinating normal speech to the model's responses. Verbalization is often termed symbolic coding, particularly if the summary rubric reduced the amount of information one needed to process in order to profit from the model's performance.
10. Socio-economic status- the social class of the observer.
11. Age- the chronological age of the observer.
12. Ethnicity- the racial-ethnic group characteristics of the observer or model.
13. Generalized imitation- A number of studies were directed at the theoretical issue of whether imitative behavior can be considered an overall response class. Because of the unique character of these studies, they were grouped in a separate class.
14. Subject characteristics- refer to observer parameters such as age, sex, race, socio-economic status and special characteristics.

### Dependent Variables

Social learning research can be organized according to four general categories of response: affective responses, motor responses, language responses, and cognitive responses. These response classes



are not fully independent and most studies involve more than one type of response. However, it was possible to reliably categorize each study according to one predominant type of response. Individual studies that were reviewed will be presented later according to this general response taxonomy. In addition, each category will be subdivided according to several subtopics. These categories are listed and described below:

1. Motoric responses- refer to simple responses which are executed by large and small muscular activity such as bar-pressing or marble-dropping. These responses are not affectively valenced and are not linguistic in character.
2. Affective responses- which include emotional-valuation responses. These behaviors are highly valenced and execution of them has motivational overtones. Behavior such as altruism, self-reinforcement, phobias, and aggression are included in this response category.
3. Language responses- refer to speech responses. This includes both nonverbal comprehension (usually pointing) responses to a verbally presented direction and the actual speech production responses of the observer such as learning to pronounce words vis-a-vis their referent and the acquisition of syntax.
4. Cognitive responses- refers to responses which involve concept formation, abstraction, rule or principle learning, and problem solving.

Within each of the four response classes, the following subtopics were introduced to further organize this literature review.

- I. Motoric Responses
  1. simple body movements
  2. generalized imitation studies
- II. Affective Responses
  1. emotional valuation responses
  2. desensitization studies
  3. moral judgment behavior
  4. altruism
  5. self-reward studies
  6. aggression responses

- III. Language responses
  - 1. word and syntax learning
  - 2. question-asking studies
  - 3. generalized imitation studies
- IV. Cognitive Responses
  - 1. rule learning
  - 2. Piagetian conservation behavior
  - 3. discrimination learning
  - 4. maze learning studies
  - 5. creativity studies

#### Experimental Setting Constancies

Three types of experimental setting constancies are usually involved in social learning research: characteristics of the model, characteristics of the observer, and task stimulus characteristics. Although often overlooked, these constancies certainly qualify any obtained results and delimit generalizations predicated on these results. Each experimental constancy along with its subcategories are listed and described below:

- I. Task stimuli- refers to the physical materials on which the model and observer performed. Human behavior was also included since in many social learning studies no adjunctive stimuli were needed or used (e.g., learning to imitate a particular word).
  - A. human behavior
  - B. geometric shapes
  - C. common objects or pictures of common objects
  - D. letters or words
  - E. numbers
- II. Subject characteristics- refer to parameters of the observer in social learning studies.
  - A. age--the chronological age of the subject
    - 1. under 4 years of age
    - 2. 4 to 6 years of age
    - 3. 6 to 10 years of age
    - 4. over 10 years of age
  - B. sex
    - 1. male
    - 2. female
    - 3. both

II. Subject Characteristics (Cont.)C. Ethnicity

1. Anglo-American
2. minority group
3. unclassified--no information reported

D. Socio-economic status

1. lower middle class
2. middle class
3. upper middle class
4. unclassified

E. Special characteristics-- refer to any unusual parameters of the children such as mental illness, physical impairments, or retardation

1. normal children
2. retarded children
3. emotionally disturbed children
4. unclassified

III. Model Characteristics- parameters of the modelA. age

1. adult
2. peer

B. Sex

1. male
2. female

C. type of model

- a. live model
- b. filmed or videotaped models
- c. written models
- d. nonhuman models

CLASSIFICATION OF REVIEWED STUDIES ACCORDING TO THE  
INDEPENDENT AND DEPENDENT VARIABLES AND THE  
EXPERIMENTAL CONSTANCIES

Each study that was reviewed is presented by its identification number. The studies are analyzed on the basis of the independent variables that were manipulated, dependent variables observed, and the variables held constant in the research design. While categories were generally mutually exclusive, departure from total independence was required in several instances.

RESPONSE			SUBJECT CHARACTERISTICS										MODEL CHARACTERISTICS										MATERIALS										
Art. No.	MOTORIC	LANGUAGE	COGNITIVE	AFFECTIVE	AGE			SEX		ETHN.			ECON. ST.			CHAR.			AGE			TYPE			SEX			GEOMETRIC					
					UNDER 4	4-6	6-10	OVER 10	BOTH	MALE	FEMALE	UNCLAS.	ANGLO-AM	MINORITY	UNCLAS.	LOWER	LOW-MIDDLE	MIDDLE	UP-MIDDLE	UNCLAS.	NORMAL	RETARDED	EM. PROB.	ADULT	PEER	LIVE	FILM/TAPE		WRITTEN	NON-HUMAN	MALE	FEMALE	HUMAN BEH.
100	x					x			x													x											x
101			x					x	x																								
102			x																														
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RESPONSE			SUBJECT CHARACTERISTICS												MODEL CHARACTERISTICS					MATERIALS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Art. No.	AGE			SEX	ETHN.	ECON. ST.					CHAR.	AGE	TYPE	SEX	FILM/TAPE	WRITTEN	NON-HUMAN	MALE	FEMALE	HUMAN BEH.	COM. OBJ.	LET/WORDS	NUMBERS	GEOMETRIC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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RESPONSE		SUBJECT CHARACTERISTICS										MODEL CHARACTERISTICS										MATERIALS													
		AGE		SEX	ETHN.	ECGN. ST.	CHAR.	AGE	TYPE				SEX																						
Art. No.	MOTOR	LANGUAGE	COGNITIVE	AFFECTIVE	UNDER 4	4-6	6-10	OVER 10	BOTH	MALE	FEMALE	UNCLASS.	ANGLO-AM.	MINORITY	UNCLASS.	LOWER	LOW-MIDDLE	MIDDLE	UP-MIDDLE	UNCLASS.	NORMAL	REWARDED	EM. PROB.	ADULT	PEER	LIVE	FILM/TAPE	WRITTEN	NON-HUMAN	MALE	FEMALE	BEHAVIOR	COM. OBJ.	LET/WORDS	GEOMETRIC
179				X			X				X	X					X	X		X				X		X						X			
180				X		X			X								X	X						X		X						X			
181			X				X					X					X	X		X						X						X			
182				X			X			X								X		X						X						X			
183				X			X		X			X				X				X						X						X			
184		X					X	X	X				X			X				X						X									
185				X			X		X											X						X							X		
186				X			X		X											X						X							X		
187				X			X		X											X						X							X		
188			X			X			X				X					X								X							X		
189				X		X			X								X	X		X						X							X		
190	X					X				X							X	X		X						X							X		
191	X					X	X		X																	X									
192		X				X			X										X							X									
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200	X					X				X										X						X									
201	X					X			X											X						X									
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205				X					X											X						X									
206									X											X						X									
207				X					X											X						X									

Art. No.	RESPONSE				SUBJECT CHARACTERISTICS												MODEL CHARACTERISTICS MATERIALS																				
	MOTORIC	LANGUAGE	COGNITIVE	AFFECTIVE	UNDER 4	4-6	6-10	OVER 10	AGE			SEX	ETHN.	ECON.	ST.	CHARACT.	AGE	TYPE	SEX	CHARACTERISTICS MATERIALS																	
									ADULT	BOTH	MALE	FEMALE	UNCLASS.	ANGLO-AMER.	MINORITY	UNCLASS.	LOWER	LOV-MIDDLE	MIDDLE	UP-MIDDLE	UNCLASS	NORMAL	RETARDED	EMOT. PROB.	ADULT	PEER	LIVE	FILM/TAPE	WRITTEN	NON-HUMAN	MALE	FEMALE	BEHAVIOR	COM. OBJ.	LET/WORDS	GEOMETRIC	
208				X		X				X			X			X									X		X					X					
209				X		X				X			X			X									X		X						X				
210				X		X				X			X			X									X		X						X				
211				X						X			X			X																					
212		X					X			X			X			X									X		X										
213		X								X			X			X									X		X										
214	X					X				X			X			X																					
215				X		X				X			X			X									X		X										
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225				X									X			X																					
226	X									X			X			X																					
227				X						X			X			X																					
228			X							X			X			X																					
229		X								X			X			X																					
230		X											X			X																					
231			X							X			X			X																					
232										X			X			X																					



Art. No.	RESPONSE				SUBJECT CHARACTERISTICS										MODEL CHARACTERISTICS MATERIALS											
	MOTORIC	LANGUAGE	COGNITIVE	AFFECTIVE	AGE	SEX	ETHN.	ECON.	ST.	CHARACT	AGE	TYPE	SEX	ADULT	PEER	LIVE	FILM/TAPE	WRITTEN	NON-HUMAN	MALF	FEMALE	HUMAN BEH.	COM. OBJ.	LET/WORDS	GEOMETRIC	NUMBERS
263		X					X				X			X		X								X		
264			X			X					X	X			X	X	X		X				X			
265				X		X					X				X	X				X			X			
266				X		X					X				X		X						X			
267				X		X					X	X			X		X						X			
268	X					X					X	X			X	X	X						X			
269	X					X					X	X			X	X	X						X			
270	X					X					X	X			X	X	X						X			
271		X	X			X					X				X									X		
272		X				X					X	X			X	X	X								X	
273	X					X					X	X			X	X	X									
274			X			X					X	X			X	X	X								X	
275			X			X					X				X		X							X		
276	X					X					X				X	X	X									
277			X			X					X	X			X	X	X								X	
278			X			X					X	X			X	X	X								X	
279			X			X					X	X			X	X	X								X	

Art. No.	INDEPENDENT VARIABLES													
	REWARD PUNISH	MODEL CHAR..	INST	SOC CONT	FEED BACK	CUE	SEX	VERB.	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL IMITATION	SUBJ CHAR
100	x						x		x					
101	x	x				x			x					
102		x	x				x		x					
103	x				x				x				x	
104	x				x				x				x	
105	x	x			x				x					
106		x					x		x					
107	x						x		x				x	
108			x			x	x	x	x					
109		x					x		x					
110				x			x		x					
111	x					x	x		x					x
112		x					x		x					
113		x					x		x					
114	x	x					x		x					x
115		x					x		x					x
116	x	x					x		x					x
117	x	x					x		x					x
118		x					x		x					
119		x					x		x					
120		x					x		x					
121	x						x		x					x
122	x						x		x					
123		x					x		x			x		x
124	x				x				x					
125	x	x					x		x					
126	x	x	x						x					
127	x	x			x		x		x					

Art. No	INDEPENDENT VARIABLES												SUBJ CHAR
	REWARD PUNISH	MODEL CHAR.	INST CONT	SOC CONT	FEED BACK	CUE	SEX	VERB.	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL INITIATION
128	x								x				
129	x				x				x				
130						x	x		x				
131							x		x				
132		x							x		x		
133	x								x				
134	x				x				x				
135			x			x	x				x		
136		x					x		x		x		x
137		x				x	x		x				x
138		x							x				
139		x					x		x				
140							x		x				
141	x						x	x	x		x		
142	x								x				
143					x			x	x				
144		x					x		x				
145						x					x		
146		x					x		x				
147	x								x				
148							x	x	x				
149		x					x		x				
150		x					x		x				
151		x					x	x	x		x		
152	x								x				
153	x						x		x				x
154	x				x		x		x		x		
155		x					x		x		x		



Art. No.	INDEPENDENT VARIABLES													
	REWARD PUNISH	MOD CHAR	INST	SCC CONT	FEED BACK	CUE	SEX	VERB	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL IMITATION	SUBJ CHAR
156		x		x			x		x					
157		x				x			x					
158		x	x				x		x		x			
159		x					x		x					
160		x					x		x		x			
161		x	x			x			x					x
162		x					x		x					
163		x							x					
164		x							x					x
165		x					x		x					x
166		x					x		y					x
167		x	x				x							
168		x							x					
169		x				x			x					
170		x							x					x
171	x	x					x		x					
172	x	x					x		x					
173								x	x					
174		x	x				x		x		x			
175		x	x				x		x		x			
176	x		x			x			x					
177			x				x	x	x					
178		x					x		x		x			
179									x					
180	x						x		x					
181							x		x					
182		x							x		x			
183	x		x		x		x		x					
184	x				x		x		x		x			
185						x	x		x					
186		x							x			x		

Art. No.	INDEPENDENT VARIABLES												SUBJ CHAR
	REWARD PUNISH	MOD CHAR	INST	SOC CONT	FEED BACK	CUE	SEX	VERB	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL IMITATION
187							x	x	x				
188							x	x	x				
189		x							x				
190	x				x				x				
191	x				x				x				
192			x						x		x		
193									x				
194		x							x		x		
195		x		x			x		x				
196		x							x				
197		x					x		x				
198		x					x	x	x				x
199	x		x						x				x
200		x					x	x	x				
201	x						x	x	x				x
202						x	x		x				
203					x	x	x		x		x		
204		x					x		x				
205								x	x				
206	x								x				x
207	x	x					x		x				
208							x	x	x				
209	x		x				x		x				
210	x	x			x		x		x				
211		x							x				x
212	x				x		x		x				
213	x					x	x		x				
214	x	x	x		x		x		x				
215		x					x		x				
216		x							x		x		
217	x					x			x				x



Art. No.	INDEPENDENT VARIABLES												SUBJ CHAR
	REWARD PUNISH	MOE CHAR	INST	SOC CONT	FEED BACK	CUE	SEX	VERB	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL IMITATION
218	x						x		x				
219	x		x						x				x
220								x	x				
221		x					x		x				
222		x					x		x				
223		x						x	x				
224	x								x				
225		x							x				
226		x							x				
227	x				x			x	x		x		
228								x			x		
229								x					
230		x					x		x				
231	x	x					x		x				
232						x	x		x				
233			x			x	x		x				
234			x					x	x		x		
235			x				x		x				
236	x						x		x		x		
237			x			x	x		x				
238							x		x		x		
239			x			x	x		x				
240						x	x		x		x		
241			x				x		x				x
242						x	x		x				x
243		x					x		x				
244			x			x			x				
245								x	x				
246								x	x		x		
247	x		x						x				x
248	x				x				x				x
249						x	x		x				x

Art. No.	INDEPENDENT VARIABLES													
	REWARD PUNISH	MOD CHAR	INST	SOC CONT	FEED BACK	CUE	SEX	VERB	MODEL	SOC STAT	AGE	ETHNICITY	GENERAL IMITATION	SUBJ CHAR
250		x					x		x					x
251		x							x					
252		x							x					
253		x					x		x	x				x
254	x		x						x				x	
255	x		x						x				x	
256	x		x						x				x	
257		x					x		x					
258		x					x		x					
259		x							x			x		x
260		x							x			x		
261							x	x	x					
262								x	x					
263	x			x	x		x		x					
264		x							x					
265		x				x			x					
266	x	x							x					x
267		x							x					
268		x					x		x		x		x	
269	x		x				x		x					
270	x								x					
271								x	x		x			
272							x		x					
273	x								x					
274							x	x	x					
275		x				x	x		x					
276	x				x		x		x					
277							x		x					
278					x		x	x	x					
279							x	x	x			x		

## SUMMARIES OF FINDINGS

Independent and dependent variables

A primary question of interest in this review of the modeling-imitation literature is the types of independent variables which accompanied modeling treatments and the classes of response which were studied. Figure 1 provides a two dimensional summary of these independent and dependent variables. It should be pointed out that the cells in Figure 1 are not fully independent. Most studies involved more than one independent variable but usually only one dependent variable. Therefore each independent variable is listed separately with the dependent measure observed.

Since modeling was an independent variable in almost all of the studies, one can determine the relative amount of research attention that each measure received by examining the dependent measures associated with modeling. Looking at this variable in the figure, one finds that 41% of the modeling studies dealt with affective behavior. Motoric responses received the next greatest amount of experimental attention (24%). Language responses were studied in 20% of the investigations. Only 15% of the reviewed studies were directed at cognitive behavior.

Looking down the column of independent variables associated with affective dependent measures, two variables, which have been studied in conjunction with modeling, have received the greatest amount of attention: the sex of the subject (or model) and the characteristics of the model. Special characteristics of the children and the operant

variables of reward and punishment have been studied rather extensively in combination with modeling as well.

Scrutinizing the important independent variables studied in motor learning investigations, reward and punishment and the sex of the observer attracted the major part of research attention. The characteristics of the model received some attention, and studies directed at training generalized imitation generally used motoric responses.

Language responses were mainly studied as a function of reward and punishment and the sex of the observer. Surprisingly, little attention has been directed at studying the influence of the ethnicity of the observer or model on language acquisition. One would have expected researchers that were interested in language responses to have devoted more study to this factor because of associated differences between children in dialect and mother tongue. The influence of the observer's age on language learning received relatively little study. Because of recent interest in developmental variables by linguists, one can expect this paucity of research to diminish rapidly in future years.

With regard to cognitive responses, the effects of verbalization and sex of the observer received the most study. The effects of the observer's age on vicarious concept formation was studied in several investigations. There was practically no attention directed at the effects of rewards and punishment on vicarious cognitive learning, and only minimal attention was given to the effect of feedback which accompanied vicarious concept learning. In addition, the ethnicity of the child, a factor regarded as very critical by experts in compensatory

education, has not been studied to any degree by social learning researchers interested in concept formation.

In conclusion then, little attention has been directed at the effects of a model's performance on cognitive responses. The potential interaction of reward and punishment or feedback in promoting vicarious concept formation appears to require additional research.

Figure 1

INDEPENDENT VARIABLES	DEPENDENT MEASURES				
	MOTOR	LANGUAGE	COGNITIVE	AFFECTIVE	TOTAL
MODELING	42	34	26	72	174
REWARD-REINFORCEMENT	20	17	2	17	61
INSTRUCTIONS	11	9	2	7	29
SOCIAL CONTEXT	0	2	0	2	4
FEEDBACK	6	8	4	4	22
CUE	5	8	5	8	26
SEX	27	21	20	52	120
VERBALIZATION	5	4	14	10	33
SOCIAL STATUS	1	0	1	0	2
AGE	2	8	10	9	29
ETHNICITY	1	0	2	3	6
GENERALIZED IMITATION	13	2	0	0	15
SUBJECT CHARACTERISTICS	7	2	1	16	26
MODEL CHARACTERISTICS	17	5	9	55	86
	T=162	T=120	T=96	T=255	

Subject characteristics and dependent variables

Figure 2 is a two dimensional summary of the characteristics of the observer and the dependent measures that were studied. The cells in this figure are independent in practically all cases.

Looking first at the age of the observers in modeling studies, very little attention has been given to studying children under the age of four years old. In particular there has been little social learning research devoted to cognitive and motor responses of these toddler aged children. However, older children have been studied more extensively.

With regard to the sex of the child, both boys and girls have been included in the vast majority of the studies.

In most journal articles, the authors failed to specify the ethnicity, economic status, or offer much of a general description of the children. This condition is denoted by the large number of subjects in the unclassified cells of Figure 2. However, it seems safe to conclude that most subjects who were unclassified according to ethnicity were Anglo-American. Relatively little attention has been given to minority group children. With regard to the economic status of the children, one can also assume that the vast majority of the unclassified subjects were drawn from the middle class. Children from the lower part of the economic spectrum have received relatively little study. Finally with regard to the personal characteristics of the children, we felt that most of the unclassified subjects could safely be considered to be normal. While modeling procedures have been used to train some retarded children, they have not been used to modify cognitive or affective

responses. Nor have these procedures been used very much with emotionally disturbed children.

In summary, several conclusions appear evident from Figure 2. First, little attention has been directed at using modeling procedures with very young children (under four years of age). Secondly, children who are minority group members and children who come from poorer backgrounds have received little experimental study.



Figure 2

SUBJECT CHARACTERISTICS		DEPENDENT MEASURES				
		MOTOR	LANGUAGE	COGNITIVE	AFFECTIVE	TOTAL
AG.	UNDER 4	2	5	1	5	13
	4-6	23	11	11	30	75
	6-10	15	17	16	40	88
	OVER 10	9	13	5	3	30
SEX	BOTH	30	31	20	56	137
	MALE	6	6	3	12	27
	FEMALE	7	2	1	2	12
ETHNICITY	UNCLASSIFIED	41	31	20	62	154
	ANGLO-AMERICAN	4	6	7	8	25
	MINORITY	2	4	5	4	15
ECONOMIC STATUS	UNCLASSIFIED	34	23	13	56	126
	LOWER CLASS	1	8	3	4	16
	LOWER-MIDDLE-CLASS	4	1	4	4	13
	MIDDLE-CLASS	5	6	7	8	26
	UPPER-MIDDLE-CLASS	3	1	3	2	9
CHARACTERISTICS	UNCLASSIFIED	36	31	24	69	160
	NORMAL	2	1	1	0	4
	RETARDED	6	6	0	0	12
	EMOTIONAL PROBLEMS	3	0	0	2	5

Model characteristics and dependent measures

Figure 3 is a two dimensional summary of the model characteristics and the dependent measures that were studied. Within each model characteristic category (i.e., age, type of model, sex), the cells are almost always independent.

It is clear from Figure 3 that most studies employed adult models to demonstrate responses for children. Fairly comparable numbers of male and female models were used in these studies. The vast majority of the studies utilized live human beings as models (72%). In a significant number of studies, filmed or taped transcriptions of live models were used. Non-human models, which were usually animated characters, were also used in several studies. There was little research on written or symbolic (following Bandura, 1969) models; however, symbolic models are often discussed under other topic headings such as instructions, coding, mapping etc., which fell outside the purview of this review.

It is interesting to note that peer models were seldom used to demonstrate cognitive or language responses. Naturalistic accounts of child learning suggest that children often imitate one another's language and conceptual responses, and yet little research has been directed towards this topic. If one sees peer teaching as an important part of an educational program, then additional research should be conducted in this area.

In Figure 3, there are no studies conducted using non-human models to modify children's language and conceptual responses. Of course the educational television program Sesame Street uses puppets extensively to model these sorts of skills, but surprisingly there is no research on this topic. Additional research in this area would fill this void.

Figure 3

MODEL CHARACTERISTICS		DEPENDENT MEASURES				
		MOTOR	LANGUAGE	COGNITIVE	AFFECTIVE	TOTAL
AGE	ADULT	34	30	22	54	140
	PEER	10	1	2	23	36
TYPE OF MODEL	LIVE	30	28	25	49	132
	FILM OR TAPE	7	3	0	28	38
	WRITTEN	0	0	0	2	2
	NON-HUMAN	8	0	1	3	12
SEX	MALE	20	12	11	51	94
	FEMALE	20	11	19	34	84

Task Materials and dependent variables

Figure 4 is a two dimensional summary of the task materials used in the reviewed observational learning studies and the type of response that was vicariously modified. It is clear that most social learning studies used common objects or pictures of common objects as stimuli for the model and the observer to perform on. In some studies, there were no adjunctive stimuli used--simply the model's behavior. Most of these studies involved modifying motoric or language responses. The language studies used common objects or written stimuli in almost 60% of cases. In 40% of the language studies, the model demonstrated response without adjunctive stimuli of any kind. Little research in the social learning tradition has employed numbers or geometric stimuli. A content analysis of children's tests recently conducted by this author has revealed extensive emphasis on numbers and geometric stimuli, and thus children are expected to respond to these stimuli as evidence of their school or preschool achievement. There appears to be no a priori reason for this oversight; indeed the television program Sesame Street uses these stimuli extensively as part of their program format. It is clear that these symbolic stimuli should be given greater attention in future social learning research.

Figure 4

MATERIALS	DEPENDENT VARIABLES				
	MOTOR	LANGUAGE	COGNITIVE	AFFECTIVE	TOTAL
BEHAVIOR	17	14	0	3	34
COMMON OBJECTS	24	10	20	59	123
LETTERS OR WORDS	1	10	2	2	15
NUMBERS	1	0	0	0	1
GEOMETRIC	0	0	5	1	6

## 100 MOTOR Simple Body Movement

Akamatsu, T. J., &amp; Thelen, H. H.

"The acquisition and performance of a socially neutral response as a function of a vicarious reward"

DEVELOPMENTAL PSYCHOLOGY, 1971, 5 (3), 440-445

**PURPOSE:** To test Bandura's hypothesis that acquisition may occur even in the absence of vicarious rewards and that vicarious reward increases the performance of imitative responses.

**SUBJECT CHARACTERISTICS:** 24 boys and 24 girls, 7-8 years old who were Caucasians attending a Catholic school

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** M Reward; M No-Consequences, No M, No-Consequences; Sex

**DEPENDENT VARIABLES:** performance measure, acquisition measure

**MATERIALS:** Button-pushing apparatus, video tape of M

**PROCEDURE:** The M groups observed a video tape of the M Performing button-pressing sequences on the experimental apparatus. The M Reward group observed the M receive verbal reward from E on every fourth trial. Ss in the M No-Consequences group observed M performing identically as above, but without reward. The No-M, No-Consequences group was not included in this phase. Ss were then given the instructions as M. Ss completed 20 trials which were used as the Performance Measure. Ss then asked to remember everything they could about M, and to demonstrate this, which was taken as the Acquisition Measure.

**RESULTS:** No significant difference between Reward and M No-Reward. All M groups had greater amounts of imitation than Controls.

## 108 MOTOR Simple Body Movements

Bandura, A., Grusec, J. E., &amp; Menlove, F. L.

"Observational learning as a function of symbolization and incentive set"

CHILD DEVELOPMENT, 1966, 37, 499-506

- PURPOSE:** Investigate effects of symbolization or representational responses on delayed reproduction of modeling stimuli to test contiguity-mediational theory (exposure to modeling stimuli elicits sensory experiences which become part of perceptual responses based on past associations).
- SUBJECT CHARACTERISTICS:** 36 boys and 36 girls from 6-8 years from two lower-middle-class elementary schools
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Concurrent Verbalization (Facilitative Symbolization); Passive Observation; Competing Symbolization; Positive Incentive, No Incentive; Sex
- DEPENDENT VARIABLE:** measure of imitation of stimuli observed in film
- MATERIALS:** Mobile laboratory, room containing short film of M exhibiting novel behavior patterns and using toys unusually, another room containing same stimulus items, candy.
- PROCEDURE:** Treatment, Facilitative-Symbolization, S verbalized M's actions as they observed film. Competing-Symbolization, S repeatedly counted one to five as they watched film. Passive-Observation, S told to watch film closely. Incentive-Set, S told she would get treats for demonstrating what she had learned. No Incentive Set, S told they would return to class after movie. Acquisition, S taken to other room to second E and asked to demonstrate M's responses. S praised and rewarded for correct responses.
- RESULTS:** Facilitative Symbolization produced more matching responses than passive observation which produced more imitation than Competing Symbolization. Incentive set had no effect.

## 123 MOTOR Simple Body Movements

Breyer, N. L., &amp; May, J. G., Jr.

"Effect of sex and race of the observer and model in imitation learning"

PSYCHOLOGICAL REPORTS, 1970, 27, 639-646

**PURPOSE:** To assess level of imitation on the part of children to see whether it is affected by race or sex of the subject.

**SUBJECT CHARACTERISTICS:** 96 Head Start children divided equally according to race (Black and Anglo) and sex characteristics

**MODEL CHARACTERISTICS:** adult male and female, Anglo and Black

**INDEPENDENT VARIABLES:** M Race; M Sex; S Race; S Sex

**DEPENDENT VARIABLES:** verbal and motor imitation of M by S

**MATERIALS:** two boxes on chairs, 30 inches apart, marbles in boxes.

**PROCEDURE:** M went to box using distinct verbal and motor patterns. S and M alternated turns.

**RESULTS:** Black females imitated more than Black males, and Anglo males imitated more than Anglo females. No verbal responses made in two-thirds of imitative sessions. Negro Ss imitated more motor behaviors than Anglo Ss. Response variability decreased when the racial characteristics of S and M were the same.



## 125 MOTOR Simple Body Movements

Bruning, J. L.

"Direct and vicarious effects of a shift in magnitude of reward and performance:

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1965, 2 (2), 278-282.

- PURPOSE:** To study the effects of differential magnitude of reward on performance speed in humans, the effects of shift in reward magnitude, the effect of an observer on a model's performance and the effect of the observer on the model's performance.
- SUBJECT CHARACTERISTICS:** 144 kindergarten boys and girls
- MODEL CHARACTERISTICS:** Naive Ms, taken from S group
- INDEPENDENT VARIABLES:** Small-to-Large Reward; Large-to-Small Reward; M; Observer
- DEPENDENT VARIABLES:** speed in operating the experimental apparatus
- MATERIALS:** lever-moving apparatus, goal box, M&Ms
- PROCEDURE:** Basic procedure involved acquisition trials on the experimental apparatus. Ss received either large M&M rewards or Small M&M rewards. Then magnitude of reward was reversed. A variation of this design involved a naive S serving as M during acquisition and another S serving as Observer. After observing M during acquisition, Observer performed in shift phase, receiving reward opposite in magnitude to M.
- RESULTS:** Ss who received a Small Reward during acquisition performed faster than Ss who received Large Rewards. Presence of the Observer had no effect on M performance. In the shift phase the mean speeds of Ss changed from small to large as rewards decreased. No difference was noted between the mean speed of Ss who actually performed the acquisition trials and those that observed M.

## 133 MOTOR Simple Body Movements

Clark, B. S.

"The acquisition and extinction of peer imitation in children"

PSYCHONOMIC SCIENCE, 1965, 2, 147-148

**PURPOSE:** To assess imitation of a button-pressing task, with reinforced and nonreinforced models.

**SUBJECT CHARACTERISTICS:** boys, 9-11

**MODEL CHARACTERISTICS:** same-grade, same-age peer, not known to S

**INDEPENDENT VARIABLES:** Reinforced M; Nonreinforced M

**DEPENDENT VARIABLES:** imitation of button-pressing response

**MATERIALS:** Button-pushing apparatus

**PROCEDURE:** S and M brought to room, asked not to talk. During practice session M asked to go first for 50 unreinforced trials to assess imitation. Next phase, correct button worth one token which could be exchanged for half-penny. Extinction trials followed with no reinforcement.

**RESULTS:** Reinforced Ms tended to produced Ss who imitated more than the nonreinforced Ms.

## 135 MOTOR Simple Body Movements

Coates, B., &amp; Hartup, W. H.

"Age and verbalization in observational learning"

DEVELOPMENTAL PSYCHOLOGY, 1969, 1 (5), 556-562

**PURPOSE:** To assess effects of verbalization and passive observation on the motoric imitation of two age groups.

**SUBJECT CHARACTERISTICS:** 36 children, 7-8 yr. olds and 36 children 3-4 yr. olds.

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** Induced Verbalization (IV); Free-Verbalization (FV); Passive Observation (PO); Age.

**DEPENDENT VARIABLES:** Description and imitation of motoric stimuli of the M.

**MATERIALS:** Film of M performing different behaviors

**PROCEDURE:** Ss observed film of M performing different actions. Ss told to described what M did after E said what M was doing, Induced-Verbalization; or described M's actions in own words, Free-Verbalization; or told to watch film, Passive-Observation.

**RESULTS:** Older Ss in PO showed higher imitation level than younger Ss in PO. Younger Ss in IV showed higher performance than younger Ss in PO. No significant difference in performance between older IV and PO Ss. Younger FV Ss performed at a higher level than younger PO Ss and at a lower level than younger IV Ss. Older FV Ss showed lower imitation levels than did older IV and PO Ss.

## 139 MOTOR Simple Body Movements

Dubanoski, R. A., &amp; Parton, D. A.

"Effect of the presence of a human model on imitative behavior in children"

DEVELOPMENTAL PSYCHOLOGY, 1971, 4 (3), 463-468

PURPOSE: To assess level of imitation on part of subjects in three experimental and three control groups.

SUBJECT CHARACTERISTICS: 81 kindergarten and first grade girls

MODEL CHARACTERISTICS: adult female

INDEPENDENT VARIABLES: M Present; M Hand Present; No M

DEPENDENT VARIABLES: Imitation of movement of stimulus objects

MATERIALS: television, six sets of items (jacks, cups, discs, etc.)

PROCEDURE: Video tapes of M, of M's hand or invisible manipulation of stimulus items in unique way shown to Ss. Ss then shown table with same stimulus items as in tape.

RESULTS: Ss in M Present superior to M Hand which surpasses No M in imitative responses. Experiment was replicated using kindergarten and second grade Ss of both sexes. Girls tended to have more imitative responses than boys. Difference between M Present and No M significant for girls but not for boys. Boys exhibited more imitative responses than girls in No-M condition.

## 144. MOTOR Simple Body Movements

Fouts, G. R., &amp; Parton, D. A.

"Imitation: Effects of movement and static events:

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1969, 8, 118-126

PURPOSE: Investigate the effects of a performing model and of moving and static events on response of a child.

SUBJECT CHARACTERISTICS: 32 boys and 32 girls enrolled in first grade

MODEL CHARACTERISTICS: adult female

INDEPENDENT VARIABLES: Static; Location (moving event), No M; M's Hand; Sex.

DEPENDENT VARIABLES: Number and frequency of single response and of response chain imitations.

MATERIALS: Video tape, three sets of stimulus items to be manipulated

PROCEDURE: S observed tape of M's hand manipulating stimuli or of stimuli moved by invisible string or of stimuli in their finished state or of stimulus items and then of the location without the stimulus items (movement).

RESULTS: Similar imitation for M condition and Static and Location conditions. Single responses required only the observation of static events while response chains required the observation of static and movement events.

## 148 MOTOR Simple Body Movements

Gerst, M. S.

"Symbolic coding processes in observational learning"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1971, 19 (1), 7-17

**PURPOSE:** To test hypothesis that symbolic coding of modeling stimuli enhances observational learning, and that different types of codes are differentially effective over time with modeled responses varying in verbalizability.

**SUBJECT CHARACTERISTICS:** 35 male and 37 female college students

**MODEL CHARACTERISTICS:** female teacher of manual (sign) language

**INDEPENDENT VARIABLES:** Summary-Labeling; Imaginal-Coding; Verbal-Description Coding; Control; Coding (counting); Sex; High and Low Verbalizability.

**DEPENDENT VARIABLE:** Measure of delayed and immediate reproduction of high verbal and low verbal modeled-response items.

**MATERIALS:** film of ten motoric responses from deaf language

**PROCEDURE:** Ss observed motoric responses one at a time, engaged in symbolic activity for one minute, reproduced response. Summary-Labeling--S told to construct descriptive phrase of motoric response, repeat it. Imaginal Coding--S told to close eyes, visualize response in detail. Verbal-Description--S told to concretely describe aloud the movements and positions of modeled response. Control--S counted backward or forward by 7s and 13s. S then engaged in complex verbal task, asked to reproduce modeled responses, utilizing coding procedures.

**RESULTS:** No sex differences. No significant interaction between type of coding and verbalizability of responses. Over-all and immediate reproduction made no significant difference between Summary-Labeling and Imaginal-Coding, both of which were superior to Verbal-Description.

## 154 MOTOR Simple Body Movements

Hamilton, M. L.

"Vicarious reinforcement effects on extinction"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1970, 9, 108-114

**PURPOSE:** Demonstrate a vicarious partial reinforcement effect and to determine the effects of vicarious reinforcement patterns on spontaneous recovery.

**SUBJECT CHARACTERISTICS:** 28 white children, averaging 60 months of age, bright, upper middle class.

**MODEL CHARACTERISTICS:** male peer

**INDEPENDENT VARIABLES:** Vicarious or Direct Reinforcement; Partial or Continuous Reinforcement

**DEPENDENT VARIABLES:** Length of time (number of trials to extinction) it takes for S to play game without reinforcement (either direct or indirect).

**MATERIALS:** marble game apparatus

**PROCEDURE:** Ss observed M play game receiving continuous-reinforcement or reinforcement on every other trial or played game without M receiving reinforcement as M did. S then allowed to play the game without reinforcement. S returned to play the game one week later for as long as he wanted without reinforcement.

**RESULTS:** Differential effects of continuous and partial reinforcement on extinction occur whether the subjects perform the response and receive the reinforcement directly or observe the model.

## 162 MOTOR Simple Body Movements

Hartup, W. W.

"Patterns of imitative behavior in young children"

CHILD DEVELOPMENT, 1964, 35, 183-191

**PURPOSE:** To assess influence of models of peer and adult age, of same or opposite sex.

**SUBJECT CHARACTERISTICS:** boys and girls, 3.5 to 5.5 years old

**MODEL CHARACTERISTICS:** peer or adult, male or female (doll M)

**INDEPENDENT VARIABLES:** Age of M; Sex of M; Sex of S

**DEPENDENT VARIABLES:** Response on a hypothetical story type of measurement

**MATERIALS:** Dollhouse, store (toy) with various types of furniture and toys. Dolls representing father, mother, and peers of same or opposite sex as subject; doll representing the subject.

**PROCEDURE:** E relates story involving adult and/or peer dolls, and asks subject what he would do (which M's choice he would follow). S responds either by taking his "ego" doll and manipulating it to follow choice of one of the M dolls, or taking an independent action.

**RESULTS:** Like-sex imitation is somewhat stronger for boys than girls (generality). Subjects who choose a male model rather than not imitate will also choose a female model rather than not imitate. This also applies to choosing a peer or a parent model rather than not imitating.



## 163 MOTOR Simple Body Movements

Hartup, W. W.

"Some correlates of parental imitation in young children"

CHILD DEVELOPMENT, 1962, 33, 85-96

- PURPOSE:** To assess the effect of modeling of either parent in development of sexual (socially appropriate behaviors) characteristics.
- SUBJECT CHARACTERISTICS:** preschool age children of either sex.
- MODEL CHARACTERISTICS:** doll M, male or female, peer or adult
- INDEPENDENT VARIABLES:** sex of M; sex of S
- DEPENDENT VARIABLES:** imitative response following hypothetical situation involving parents of either sex.
- MATERIALS:** Model of a house, dolls (parents, and child of same sex as subject). ITSC instrument administered 5 months before the parental imitation interview. Parental Attitude Research Instrument administered to parents 18 months before parental imitation interview.
- PROCEDURES:** Ss met with E in separate room. Were shown the dollhouse and the dolls. E used parent dolls as models in a hypothetical, dual-choice situation, and asked subject what the child doll (representing subject) would do, follow the "Mommy" or the "Daddy".
- RESULTS:** It was found that for girls, modeling of the mother produced a greater tendency toward feminine behavior. In boys, the imitation of the father was not as necessary for development of masculine behavior. Authoritarian maternal attitudes were associated with like-sex parental imitation in children of both sexes.

## 169 MOTOR Simple Body Movement

Jasperse, C. S., &amp; Van Hekken, S. M. J.

"Effect of nurturance on imitative behavior:

PSYCHOLOGICAL REPORTS, 1971, 28, 201-202

PURPOSE: To test the hypothesis that a model's nurturance enhances the imitation of task-relevant behavior but not of task-irrelevant behavior.

SUBJECT CHARACTERISTICS: 24 girls, 5-6 yrs. old, enrolled in working-class area kindergarten

MODEL CHARACTERISTICS: "friendly" adult

INDEPENDENT VARIABLES: Nurturant M; Non-Nurturant M; Task Relevant and Task-Irrelevant Behaviors

DEPENDENT VARIABLES: imitation score for task relevant and task irrelevant behaviors

MATERIALS: maze tests

PROCEDURE: S interacted with Nurturant or Non-Nurturant M. M and S completed mazes with M performing different irrelevant behaviors. Retention run three weeks later.

RESULTS: No difference in task relevant imitation between the two nurturant groups. Irrelevant task behavior was imitated when it had positive value, that is, was performed by the Nurturant M.

## 170 MOTOR Simple Body Movement

Kanfer, F. H., &amp; Duerfeldt, P. H.

"Learner competence, model competence, and number of observation trials in vicarious learning"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1967, 58 (3), 153-157

**PURPOSE:** To test the effects of vicarious learning in a paired-associate nonsense syllable task under conditions of varied model competence, varied subject competence, and varied numbers of vicarious trials.

**SUBJECT CHARACTERISTICS:** 135 college students

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** number of Observational Trials; Model Competence; Learner Competence

**DEPENDENT VARIABLES:** acquisition of M's paired-associate nonsense syllable responses

**MATERIALS:** tapes of ten pairs of nonsense syllables

**PROCEDURE:** S told that she was to learn the pairs so that upon hearing the first syllable she would be able to respond immediately to the second. S exposed to M at either early or late stage of her learning, M was at an early or a late stage of learning. M heard for either one or three of ten trial blocks.

**RESULTS:** Ss exposed to M early learned significantly better than Ss exposed late. M Competence and duration of exposure did not affect learning significantly. Results suggest that vicarious trials late in acquisition had a disruptive effect while early exposure yielded results similar to those of direct reinforcement trials.

## 171 MOTOR Simple Body Movement

Kelly, R.

"Comparison of the effects of positive and negative vicarious reinforcement in an operant learning task"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1966, 57 (5), 307-310

## PURPOSE:

Compare the relative effects of positive and negative vicarious reinforcement in an operant learning task which precluded implicit reinforcement effects.

## SUBJECT CHARACTERISTICS:

60 boys and 60 girls enrolled in a middle-class area kindergarten

## MODEL CHARACTERISTICS:

peer

## INDEPENDENT VARIABLES:

Positive, Negative or No Social Reinforcement; Direct or Vicarious Reinforcement

## DEPENDENT VARIABLES:

number of responses to motor task

## MATERIALS:

marble-dropping motor task

## PROCEDURE:

Ss tested in pairs, one Performer (P) and one Observer (O). P performed task receiving Positive, Negative or No Social Reinforcement. O then played game, receiving no reinforcement.

## RESULTS:

Direct Reinforcement was a highly significant effect. Negative Reinforcement showed the highest response rate, Control was lowest for P and O groups.

## 176 MOTOR Simple Body Movement

Lewis, D. J., &amp; Duncan, C. P.

"Vicarious experience and partial reinforcement"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1958, 57, 321-326

- PURPOSE:** To assess length of time for high and low reinforcement activities to achieve extinction.
- SUBJECT CHARACTERISTICS:** 200 college age students
- MODEL CHARACTERISTICS:** experimenter adult
- INDEPENDENT VARIABLES:** Verbal M or Real M; Direct or Vicarious Reward Treatment conditions: Watch and Win, Watch only, Explain and Win, Explain only, Control; High or Low Level of Reinforcement (25%, 100% reward acquisition series).
- DEPENDENT VARIABLES:** number of trials to extinction
- MATERIALS:** Modified slot machines, with only the first eight trials yielding reinforcement, whether played by E, S, or a hypothetical M. S placed metal token in slot and pressed lever down for reinforcement.
- PROCEDURE:** S assigned to 1 of 5 treatments (see above) He was instructed by either a M (E) or a hypothetical verbally described series of trials. In the Watch and Win condition S received a token whenever E did. In the Watch only Condition, S did not. After the first 8 trials none of the Ss in either condition received a reward. During the extinction phase S gave E the level of expectancy to win by calling out a number according to the scale from 1 to 6. A number above 3 indicated a high level of expectancy of winning.
- RESULTS:** If S received reinforcement along with the model (real or hypothetical) vicarious learning did take place, and the subject required a greater number of trials to extinction. However, those Ss who only watched a model (real or hypothetical) had less vicarious learning than above. The learning which took place was described in terms of a mediational stimulus-response type learning.

## 196 MOTOR Simple Body Movement

Maley, R. F.

"The effect of certain imitative cues upon the learning of response patterns"

JOURNAL OF SOCIAL PSYCHOLOGY, 1971, 83, 33-44

- PURPOSE:** To study the association between environmental and imitative cues on interference in learning response sequences.
- SUBJECT CHARACTERISTICS:** 105 college age male students
- MODEL CHARACTERISTICS:** top row of lights on the apparatus
- INDEPENDENT VARIABLES:** High or Low Level of M Accuracy
- DEPENDENT VARIABLES:** number of trials to reach criterion
- MATERIALS:** Wooden problem box with opal glass apertures and contact response button. The lower row of lights could be lit by pressing buttons below them. "Right" and wrong" buttons. Top row of lights served to indicate the response of a hypothetical previous subject (M).
- PROCEDURE:** S told that he would be observing responses of a previous S. In Part I of the experiment all groups had to learn the same order of response, but the level of correctness of the M varied (100%, 87½%, 75%, 50%, 25%, 0%). In the 100% level of correct responses, the M was always correct, and criterion could be attained simply by imitating the M. All Ss were asked to verbalize the rule in this treatment since criterion could be attained by imitation alone. For the rest of the groups, criterion could not be reached solely by imitation of M. The correctness of the M's response varied with the level of percentage. The M's incorrect responses were varied randomly.
- RESULTS:** Greatest learning in 100% groups, while the most difficult to learn in was the 50% group. The mean number of trials to reach accuracy, to learn the task, became greater as the percent of association between M's behavior and correct responses decreased.

## 200 MOTOR Simple Body Movement

Masters, J. C., &amp; Driscoll, S. A.

"Children's 'imitation' as a function of the presence or absence of a model and the description of his instrumental behaviors"

CHILD DEVELOPMENT, 1971, 42, 161-170

- PURPOSE:** To investigate children's tendencies to act upon the environment, "imitate" so as to arrange objects as they had been described in a story.
- SUBJECT CHARACTERISTICS:** 4 year old nursery school children
- MODEL CHARACTERISTICS:** story character Tarzan
- INDEPENDENT VARIABLES:** M Present--Performance Description or Location Description; M Absent--Location Description; Sex.
- MATERIALS:** jungle story, assorted toys
- PROCEDURE:** Ss read a story describing toys discovered in the jungle that were either novelly arranged by Tarzan, or found by Tarzan arranged in a novel way, or that Tarzan found the toys, but they weren't unusually arranged. In the second study, there was no M in the Location Description condition. Tarzan was rewarded at the end of all the stories. Ss left alone to play with the toys. Ss in Study I were asked to recall Tarzan's behavior.
- RESULTS:** In Study I boys tended to imitate more in every condition, but the difference was only significant in the location description condition. Ss in the performance description condition and location description condition showed more imitation than the control group. In Study II there was no reliable sex difference. Ss in the 3 experimental conditions imitated more than the control group. Marginally significant tendency for children in the performance description condition to imitate more than Ss in the other groups.

## 214 MOTOR Simple Body Movement

Parton, D. A.

"Imitation of an animated puppet as a function of modeling, praise and directions"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1970, 9, 320-329

**PURPOSE:** To test theory that similarity of responding acquires reinforcing function.

**SUBJECT CHARACTERISTICS:** 50 boys and 50 girls from public school kindergarten with mean age of 69 months

**MODEL CHARACTERISTICS:** cowboy puppet able to make five motor responses

**INDEPENDENT VARIABLE:** Verbal Requests; M; No M; Verbal Praise; No Verbal Praise

**DEPENDENT VARIABLES:** Measure of matching responses to puppet's motor responses of foot-tapping, bar-pressing and arm-raising

**MATERIALS:** cowboy puppet able to make 5 motor responses seated on a lighted stage in front of S's chair, tape of puppet's adventures

**PROCEDURE:** Tape of puppet's adventures interspersed with 42 interruptions composed of foot-tapping, bar-pressing and arm-raising trials. S received request by puppet to imitate foot-tapping and bar-pressing either half or all of the time, while M did or did not exhibit request response. Half of Ss praised for each matching response. No request for arm-raising response which was generalized imitation response.

**RESULTS:** Frequency of requested or reinforced responses maintained, but generalized imitation (arm-raising) was infrequent and decreased as session progressed.



## 226 MOTOR Simple Body Movement (Cont.)

## PROCEDURE:

alone to play with the game. Ss in the Elicitation subgroup were composed of two No Consequences subgroups. They were told to play the game and that it was a game of memory not skill. The Ss were asked to play the game the same way they remembered the M playing it.

## RESULTS:

High perceived similarity to the M appeared to facilitate acquisition and performance. Groups that observed the M performed imitative behaviors significantly more than the No M groups. Neither the main effect of response consequences to the M nor the interaction of response consequences with other variables were statistically significant.

## 241 MOTOR Simple Body Movement

Ross, D.

"Relationship between dependency, intentional learning and incidental learning in preschool children"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1966, 4 (4), 374-381

- PURPOSE:** To determine whether dependency relates systematically to intentional learning and incidental learning in preschool children.
- SUBJECT CHARACTERISTICS:** 26 boys and 26 girls, upper-middle-class children enrolled in nursery school, with mean age of 4 yrs. 7 mo. Ss were selected on the basis of ratings of their dependent behavior by teaching staff and the E, and were classified as high-dependent or low-dependent for the experiment.
- MODEL CHARACTERISTICS:** adult female M (also acted as adult customer); After training by M, Ss became "peer trainers" (peer Ms) for children who had been trained for role of customers. Six preschool girls served in this capacity for the experiment.
- INDEPENDENT VARIABLES:** Sex of S; Dependency (High or Low); Adult or Peer M
- DEPENDENT VARIABLES:** Imitation of M's relevant and irrelevant behaviors in post-office task, correlated with original high- or low-dependency rating of S.
- MATERIALS:** Small wooden "post office", with cash register, stamps, postmark stamp and pad, scales, etc. To left of PO was table and chair with telephone, pad of paper and pencils, a balloon above a wastebasket was near the table. A mailbox and garden were behind PO. The telephone was connected to a telephone in the observation room.
- PROCEDURES:** E (adult M) brought Ss individually to play in AM's post office. AM first taught S 7 sets of "postman behaviors" (intentional learning); AM also exhibited certain partially relevant

## 241 MOTOR Simple Body Movement (Cont.)

## PROCEDURES:

and irrelevant behaviors (incidental learning) (e.g., taking an indirect route to mailbox; or putting foot on chair when telephoning). After this training, S was to play role of postman. AM then left the room and scoring period began, during which AM mailed letters and parcels, CC (child customer) mailed letters and parcels, and then S taught CC the postman's tasks. With Control group SS, AM allowed S to play postoffice as he wished; AM later acted as adult customer; also a CC came in later, and finally S taught CC how to be a postman.

Interviews with Ss' mothers to see if mothers were interested in their child's achievement or social skills development, and postexperimental observations of the Ss (a count was made of Ss who asked for second turn in experiment) were made.

## RESULTS:

The hypotheses that low-dependent children would show more intentional and less incidental learning than did the high-dependent children were confirmed. However, there was evidence that the experimental situation was more attractive to the low-dependent children because these children and their parents placed a higher value on achievement behavior than did the high-dependent children and their parents. Boys in this experiment exhibited more general independence behavior than did girls. For specific independence behaviors there were no differences between the sexes, but within both sexes low-dependent children showed these behaviors more often than did high-dependent.

## 262 MOTOR Simple Body Movement

van Hekken, S. M. J.

"The influence of verbalization on observational learning in a group of mediating and a group of non-mediating children"

HUMAN DEVELOPMENT, 1969, 12, 204-213

- PURPOSE:** To observe the influence of verbal labelling on observational learning with a group of mediating children and a group of non-mediating children.
- SUBJECT CHARACTERISTICS:** 60 boys aged 7-8; middle class SES in Amsterdam
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Mediating or non-mediating SS; M; Nò M; No Verbalization, Irrelevant Verbalization; Relevant Verbalization
- DEPENDENT VARIABLES:** Number of imitative behaviors the subject reproduced when asked to do so (acquisition).
- MATERIALS:** assorted toys
- PROCEDURE:** Ss were divided into Mediating and Non-mediating groups by a pretest involving reversal shift performance. Ss viewed a film where the M showed unusual behavior and used materials in an unusual way. Ss were instructed to tell everything the M did while the M was performing, or to count while the M was performing, or did not verbalize. Ss were instructed to watch the film closely. For Posttest I, Ss were then taken to a room that contained the materials used in the film. They were asked to demonstrate the M's responses and were reinforced by praise for each matching behavior. Posttest II was given four weeks later.
- RESULTS:** In the mediating group, significantly more responses of the model were reproduced under the relevant verbalization condition than under the non-verbalization condition in posttest I and posttest II. In the irrelevant

## 268 MOTOR Simple Body Movement

Wapner, S., &amp; Cirillo, L.

"Imitation of a model's hand movements: Age changes in transposition of left-right relations"

CHILD DEVELOPMENT, 1968, 39, 887-894

- PURPOSE:** To examine the effects of age changes in a situation of copying a M's movements while facing him.
- SUBJECT CHARACTERISTICS:** 240 subjects, 20 boys and 20 girls in each of six age groups, ranging from 8-18 years.
- MODEL CHARACTERISTICS:** Adult E served as M
- INDEPENDENT VARIABLES:** Hand E used; Ear or Object E touched; Sex of S; Age of S
- DEPENDENT VARIABLES:** S's imitative motor responses to task items with relation to E's left and right movements
- MATERIALS:** motor stimuli, disks
- PROCEDURE:** Each S was tested individually by E who instructed him: "Do just like I do. Watch me. I want you to do exactly as I do." E then administered 12 task items, which fell into three categories: (a) E touched right or left hand to his own right or left ear; (b) E touched right or left hand to an object; (c) E touched right or left hand to an object shared with S. The order of the items was right hand to left, left to right, left to left, right to right.
- RESULTS:** With increasing age, the mean number of responses paralleling the model's movement as in a mirror decreased, the mean number of correct transpositions of the model's movement increased, and the mean number of excessive right-handed and unilateral responses decreased (all significant  $P < .001$ ). The findings support the idea that left-right transposition requires the internalization of the left-right distinction occurring in action and the representational coordination of perspectives.

## 104 MOTOR Generalized Imitation

Baer, D. M., &amp; Sherman, J. A.

"Reinforcement control of generalized imitation in young children"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1964, 1, 37-49

**PURPOSE:** To study influence of direct and indirect reinforcement on imitation of motor responses.

**SUBJECT CHARACTERISTICS:** kindergarten children, mostly girls

**MODEL CHARACTERISTICS:** Cowboy puppet

**INDEPENDENT VARIABLES:** M; Reinforcement

**DEPENDENT VARIABLES:** measure of bar-pressing responses (generalized imitation)

**MATERIALS:** Cowboy puppet, bar-press

**PROCEDURE:** During introductory phase, puppet pressed his bar and asked S if she knew how to press her bar. Puppet then modeled various responses such as nodding head, nonsense syllables and bar-pressing. S reinforced for matching all responses except bar-pressing. S seen several times. Extinction methods also used.

**RESULTS:** Bar-pressing increased as reinforced responses increased. In extinction reinforcement presented at random, bar-pressing decreased. Time-out phase also presented a decrease of bar-pressing. When reinforcement was reinstated for other responses, bar-pressing increased.

## 107 MOTOR Generalized Imitation (cont.)

## RESULTS:

topography of the responses, children perform rewarded imitations at a high rate and discontinue nonrewarded imitations. Under conditions where some imitative responses are positively reinforced, similar nondiscriminable responses can be effectively maintained even though they never produced reinforcement.

## 147 MOTOR Generalized Imitation

Garcia, E., Baer, D. M., &amp; Firestone, I.

"The development of generalized imitation within topographically determined boundaries"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1971, 4 (2), 101-112

- PURPOSE:** To demonstrate the effectiveness of modeling, propping, reinforcement training procedures in training important motor and verbal skills to retardates. A second aim involved the training of generalized imitative skills in retarded children.
- SUBJECT CHARACTERISTICS:** Two boys and two girls ranging in age from 8 to 14 years. All subjects were institutionalized mental retardates classed as "severe".
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** M; Propping (with fading); and Food Reinforcement
- DEPENDENT VARIABLES:** Small motor responses performed by simple hand movements while seated; large motor responses performed by gross motor movements while standing and walking; short vocal vowels.
- MATERIALS:** language and motor behavior of the model, some use of common objects, e.g., door, waste basket, bell, etc.
- PROCEDURE:** The training procedures involved modeling the response and reinforcing imitations. If S was unable to imitate "propping" procedures were also used (e.g., guiding the S's arm or mouth movements). Shaping procedures were used in that the criterion for response exactness was continually improved. When responses reached criterion levels, prompts were gradually faded out and the reinforcement schedule was thinned to an intermittent schedule. A multiple baseline



## 147 MOTOR Generalized Imitation (Cont.)

- PROCEDURE: procedure was used to assess training and generalized imitation effects. Three classes of responses were sequentially trained: small motor, large motor, and short vocal responses. At the end of each training session, testing of all classes of responses plus an untrained class of responses (long vowels) was carried out. Unreinforced imitative-generalization was continually measured by the probes. Untrained responses were imitated even though not reinforced.
- RESULTS: Generalized imitation was observed in each S, but this generalization was restricted to the topographical type of imitation currently receiving training or having received training.

## 190 MOTOR Generalized Imitation

Lovaas, O. I., Berberich, J. P., Perloff, B. F., &amp; Schaeffer, B.

'Acquisition of imitative speech by schizophrenic children'

SCIENCE, 1966, 151, 705-707

- PURPOSE:** To teach imitative speech to mute schizophrenic children within an operant conditioning framework.
- SUBJECT CHARACTERISTICS:** Two "profoundly schizophrenic" 6 yr. old boys, inpatients at a psychiatric institute.
- MODEL CHARACTERISTICS:** adults
- INDEPENDENT VARIABLES:** Contingent Rewards (both response- and time-contingent); Classical Shaping and Fading Procedures
- DEPENDENT VARIABLES:** S's imitation of modeled vocal responses
- MATERIALS:** food as reinforcer
- PROCEDURE:** Training was conducted six days a week, seven hours a day. Four steps were required to establish verbal imitation. S was rewarded for all vocalizations with nurturant E. S was rewarded for emitting a sound within time limit. S had to match E's vocalization. S had to discriminate between old and new sounds. Reward and punishment were used.
- RESULTS:** After 26 days of training, both Ss had learned to imitate new words with ease and rapidity (performance ranged from S requiring several days to learn a single word during the first 2 weeks of the experiment, and but a single day to learn several words during last 2 weeks). There was a deterioration in imitative behavior whenever rewards were shifted from response-contingent to time-contingent delivery with the conclusion that reward immediately following correct imitative behavior (and withholding of reward following incorrect responding) is a crucial variable in maintaining imitative behavior in these children.

## 191 MOTOR Generalized Imitation

Lovaas, O., Freitas, L., Nelson, K., & Whalen, C.

"The establishment of imitation and its use for the development of complex behavior in schizophrenic children"

BEHAVIOUR RESEARCH AND THERAPY, 1967, 5, 171-181

- PURPOSE:** To report on a procedure where schizophrenic children acquire the beginning of nonverbal imitation.
- SUBJECT CHARACTERISTICS:** 11 schizophrenic and autistic children, age range 4-13 years.
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** Simple to Complex Discrimination Tasks; M; Reinforcement
- DEPENDENT VARIABLES:** Behaviors imitated on the discrimination task (phase I). Complex behavior patterns that they were able to teach the Ss (phase II).
- MATERIALS:** discrimination tasks
- PROCEDURE:** Phase I involved the establishment of generalized imitation. Ss were given a set of successive discriminations. They were reinforced for closer and closer approximations of the attending adult's behavior. Training was carried out 1 hour a day for five days a week. Food was used as reinforcement. Phase II consisted of bringing the new behavior under imitative control, and then shifting the stimulus control for the attending adult's behavior to a more appropriate context, such as a verbal command. This was done in areas such as personal hygiene, drawing and printing.
- RESULTS:** Phase I, each S acquired generalized nonverbal imitation. All S's learning curves were characterized by an increase in imitation over trials. The amount of time required to train each S varied considerably. The two Ss given the extinction condition stopped performing when reinforcement was no longer present. Phase II Ss were taught a number of behavior patterns using generalized imitation.

## 199 MOTOR Generalized Imitation

Martin, J. A.

"The control of imitative and nominative behaviors in severely retarded children through generalized-instruction following"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 11, 390-400

- PURPOSE:** To determine whether unreinforced imitations could be maintained when interspersed among reinforced, nonimitative behaviors.
- SUBJECT CHARACTERISTICS:** 4 severely retarded institutionalized boys, ages 7-10
- MODEL CHARACTERISTICS:** adult E served as M
- INDEPENDENT VARIABLES:** Verbal Instructions or M's Performance; Contingent Rewards; Differential Reinforcement
- DEPENDENT VARIABLES:** S's discriminate imitation of modeled and instructed responses through phases of acquisition, differential reinforcement, and extinction.
- MATERIALS:** Experimental room was furnished with table and small chairs, components of the room were used as stimulus materials for some of the behaviors (i.e., window); food and praise were reinforcers.
- PROCEDURE:** Sessions were two or three times a day, five or six days a week. Ss were instructed to perform a behavior or a behavior was demonstrated for them. There were a series of behaviors. Ss were reinforced for imitating instructed or demonstrated behavior. In a later phase, Ss were reinforced immediately after instructions or demonstration (Differential Reinforcement); a slight delay in reinforcement was added. Extinction procedures for all Ss was introduced.
- RESULTS:** Differential Reinforcement procedures demonstrated that the maintenance of unreinforced "instruction-following" was dependent upon the response-contingent reinforcement of other

## 199 MOTOR Generalized Imitation (Cont.)

## RESULTS :

"instruction-following" behaviors. In the final phase, those behaviors which were not reinforced in the first phase were reinforced and those behaviors which were originally reinforced were not reinforced. Unreinforced imitations were maintained when non-imitative behaviors were reinforced and unreinforced nonimitative behaviors were maintained when imitative behaviors were reinforced.

## 201 MOTOR Generalized Imitation

Masters, J. C., &amp; Morris, R. J.

"Effects of contingent and noncontingent reinforcement upon generalized imitation"

CHILD DEVELOPMENT, 1971, 42, 385-397

**PURPOSE:** To test stringently the hypothesis that reinforcement for imitative responding will result in generalized imitation.

**SUBJECT CHARACTERISTICS:** 56 4-year-olds, 28 boys and 28 girls

**INDEPENDENT VARIABLES:** Reward given by M; Reward given by Token Machine; No Reward; Noncontingent Prepayment of Tokens; Sex.

**DEPENDENT VARIABLES:** number of imitative responses on motor task

**MATERIALS:** assorted toys, tokens for rewards

**PROCEDURE:** M displayed seven aggressive behaviors, and instructed S to imitate them. S was rewarded by M with tokens and social approval; received no reward; received reward tokens from a machine or received noncontingent prepayment of tokens before observing M. Male M demonstrated sex neutral behaviors, no rewards given. S then left alone in the room with toys M had used.

**RESULTS:** Boys imitated the male model significantly more than girls did, but the sex by condition interaction was not significant. The effect of conditions for boys was not significant, but was significant for girls. Girls that had the model giving the reward condition imitated during the test phase to a greater extent than girls who had not been rewarded or had the noncontingent condition.

## 206 MOTOR Generalized Imitation

Metz. J. R.

"Conditioning generalized imitation in autistic children"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1965, 2, 389-399

- PURPOSE: To assess effects of modeling on imitative behavior (non-existent) of autistic children.
- SUBJECT CHARACTERISTICS: 3 hospitalized, autistic children. At pretesting, these Ss exhibited no imitative actions.
- MODEL CHARACTERISTICS: adult male
- INDEPENDENT VARIABLES: Reinforcement; Shaping Procedures
- DEPENDENT VARIABLES: generalized imitation; imitation of modeled responses
- MATERIALS: Three lists of simple motor tasks modeled by experimenter to be imitated by subject; a list of four motor activities which were not reinforced by experimenter, but were used to assess generalization.
- PROCEDURE: The Ss were seen six days a week, at lunch time, after having been deprived of breakfast, for  $\frac{1}{2}$  to  $\frac{3}{4}$  hrs. per day. E and an assistant saw the S. The E remained constant for each trial, but the assistant changed. The assistant kept observation records, and handed S the rewards (in form of food and positive, reinforcing verbalizations). The experiment was divided into 6 phases: (1) pretesting, (2) preliminary training, (3) early testing, (4) intensive training, (5) later testing, and (6) posttesting. For training sessions, each time the S performed a task correctly, he received a token, and verbal praise ("Good."). The tokens could be exchanged for food, at first one token could be exchanged for food, but this was gradually raised to three tokens which could be exchanged for food.

## 217 MOTOR Generalized Imitation

Peterson, R. F.

"Some experiments on the organization of a class of imitative behaviors"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1968, 1 (3), 225-235

**PURPOSE:** To examine variables influencing organization of an imitative class, number of responses influenced by the same stimulus, and how a response can be removed from or added to such a class.

**SUBJECT CHARACTERISTICS:** mentally-retarded girl, 12 years, who had exhibited no imitative behavior

**MODEL CHARACTERISTICS** adult

**INDEPENDENT VARIABLES:** Massed Evocation; Interspersed Evocation; Massed Evocation on Nonreinforced Imitations; Reinforced and Nonreinforced Imitative Responses

**DEPENDENT VARIABLES:** Imitative responses duplicating topography of E's response or use of object in the same way within 30 seconds of stimuli presentation.

**MATERIALS:** food as reinforcer, common objects as stimulus materials

**PROCEDURE:** Four experiments in which S was exposed to reinforcement and nonreinforcement of responses, extinction procedures, and different types of stimulus presentation which were massed and interspersed evocation of stimulus presentation.

**RESULTS:** Responses tended to be performed when interspersed among reinforced imitations and less frequently under massed stimulus presentation. Under massed stimulus presentation, single responses could be extinguished, but were performed when their evoking stimulus was interspersed among other imitative stimuli. Four out of five nonimitative behaviors were extinguished under massed and interspersed stimulus operations. The three imitative behaviors following nonimitative responses were also extinguished. Nonreinforced, nonimitative responses extinguished under massed evocation were readily performed when interspersed among reinforced imitations.



## 218 MOTOR Generalized Imitation

Peterson, R. F., Merwin, M. R., Moyer, T. J., & Whitehurst, G. J.

"Generalized imitation: The effects of experimenter absence, differential reinforcement, and stimulus complexity"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 12, 114-128

- PURPOSE:** To investigate and interrelate the effects of the experimenter's absence, discrimination training and the complexity of the stimulus situation on the maintenance of nonreinforced imitative behaviors.
- SUBJECT CHARACTERISTICS:** 2 boys and 2 girls (age range 4 yrs. 3 mo. to 5 yrs. 1 mo.)
- MODEL CHARACTERISTICS:** adult female experimenter also served as model
- INDEPENDENT VARIABLES:** E Present; E Absent; Differential Reinforcement; Response Addition
- DEPENDENT VARIABLES:** S's imitation of modeled behaviors with differential effects of experimental procedures (i.e., experimenter's presence, reinforcement, etc.).
- MATERIALS:** Experimental room was furnished with two tables and three chairs. Sessions were conducted at small table with bead dispenser mounted on it; large table had various articles used for modeled responses on it; toys for which beads could be exchanged were also placed on this table later.
- PROCEDURE:** Ss seen over a period of time. There were 36 demonstrations per session with E remaining in room or having S imitate modeled responses after E left the room. Ss were differentially reinforced (beads) for predetermined responses. New responses were added.
- RESULTS:** Imitations were frequently performed during experimenter presence but were seldom observed when the E was absent.

## 218 MOTOR Generalized Imitation (Cont.)

## RESULTS:

Three of the four Ss imitated differentially under the reinforcement condition. However, the presence of the E served to abolish this performance in two subjects. An attempt to add to the complexity of the stimulus situation by increasing the number and type of behaviors demonstrated to these two subjects, was not successful in maintaining nonreinforced imitations. The study indicates the need for a more precise definition of "generalized imitation" and emphasizes the importance of antecedent and setting conditions as factors in the multiple control of imitation.

## 219 MOTOR Generalized Imitation

Peterson, R. F., &amp; Whitehurst, G. J.

"A variable influencing the performance of generalized imitative behaviors"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1971, 4 (1), 1-9

- PURPOSE:** To determine the effects of various factors influencing generalized imitation (consequences, reinforcement, command).
- SUBJECT CHARACTERISTICS:** 2 boys and 2 girls, aged 4 yrs. 8 mo. to 5 yrs. 2 mo., from a university preschool (youngest child, a girl, did not complete the study). Experiment 2: 2 boys and 2 girls, aged 5 yrs. 5 mo. to 6 yrs. 8 mo. who were acquaintances of Ss in Experiment I.
- MODEL CHARACTERISTICS:** adult male experimenter also served as model
- INDEPENDENT VARIABLES:** Consequences; No Consequences; Reinforcement for Correct or Incorrect Imitation; Command, No Command; Delayed Consequences; Verbal or Token Reinforcer; Presence or Absence of E for responses; Predelivery of tokens; Complete or Incomplete Instructions.
- DEPENDENT VARIABLES:** S's imitative behavior of modeled responses in various experimental conditions.
- MATERIALS:** bead dispenser, small items used as stimulus materials, and trinkets for which beads could be exchanged, were in the room.
- PROCEDURE:** Two Experiments in which S was seen once a day, three to five times a week. The two studies were the same except that no reinforcement was used for the responses in Experiment II. Beads were used as the reinforcer tokens. The experimental variables noted above were applied.
- RESULTS:** Experiment I: generalized imitative behaviors can be very durable; only one of three subjects was influenced by a variety of reinforcement-like procedures. Control over the behavior

219 MOTOR Generalized Imitation (Cont.)

RESULTS:

of all three Ss was obtained when a setting event involving the presence or absence of the experimenter was systematically varied. Experiment II: A second test of this variable was carried out, with results showing moderate to strong control over non-reinforced imitations in four preschool children.

## 254 MOTOR Generalized Imitation

Steinman, W. M.

"Generalized imitation and the discrimination hypothesis"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1970, 10, 79-99

- PURPOSE:** To determine whether children continue to imitate reinforced responses in generalization research because they cannot discriminate the contingencies associated with the various responses being made.
- SUBJECT CHARACTERISTICS:** 2 girls, 4 yrs., enrolled in a university preschool in Experiment I; four boys, 6.5 to 7.9 yrs., enrolled in a public summer school in Experiment II and III.
- MODEL CHARACTERISTICS:** adult females
- INDEPENDENT VARIABLES:** Reinforced and Nonreinforced responses; Single and Choice presentation; Contingency Instructions added for Reinforcement in Experiment III.
- DEPENDENT VARIABLES:** S's discrimination between reinforced and nonreinforced behaviors and imitating only the reinforced responses.
- MATERIALS:** desk, table, chairs, bead dispenser, various small objects used in the trials, toys as prizes.
- PROCEDURE:** A session was composed of a block of single presentations followed by a block of choice trials followed by a second block of single presentations and a second block of choice trials. Within each block of single presentations, every nonreinforced and reinforced response was modeled once in a random order. Several manipulations of nonreinforced responses, reinforcement contingencies and task characteristics were attempted.

## 254 MOTOR Generalized Imitation (Cont.)

## RESULTS:

Results indicate that the discrimination explanation for generalized imitation may be only partly correct. Although children imitated a nonreinforced response when no reinforced alternative was available, they reliably imitated the reinforced response when it was presented in a choice procedure. Similarly, Ss immediately stopped imitating nonreinforced responses when simply instructed to stop. It was suggested that the generalized imitation effect is largely a function of instructional and other social variables operating within typical generalized imitation procedures.

## 255 MOTOR Generalized Imitation

Steinman, W. M.

"The social control of generalized imitation"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1970, 3 (3), 159-167

- PURPOSE: To determine the bases for the maintained "nonreinforced" imitations observed in generalized imitation research by the manipulation of instructions, discrimination procedures, and sources of reinforcement.
- SUBJECT CHARACTERISTICS: six girls (ages 7.2 to 9.0 yrs) randomly selected from public summer school classes.
- MODEL CHARACTERISTICS: adult female
- INDEPENDENT VARIABLES: Reinforcement or Nonreinforcement for responses; Single or Choice Presentation; Instructions to Not Imitate; Option Instructions; No Instructions.
- DEPENDENT VARIABLES: S's discriminative imitation of reinforced and nonreinforced behaviors modeled by adult experimenters.
- MATERIALS: beads (exchangeable for toys) were used as token reinforcers; table in experimental room and various small common objects were used as stimuli for M responses.
- PROCEDURE: During experimental sessions a constant interval was maintained between responses modeled, whether S imitated or not. For each single-presentation trial E gave instructions, modeled a response, delivered reinforcer if S imitated correctly, then left the room. Five seconds later, the appropriate E entered the room for the next trial. On choice trials, one E gave instructions, modeled a response, immediately after which the second E gave instructions and modeled a response. The six phases varied single and choice presentation, reinforcement and nonreinforcement, instructions and no instructions.

## 255 MOTOR Generalized Imitation (Cont.)

## RESULTS:

Ss imitated all responses when no reinforced alternative was available, even though results of choice procedures and special instructions clearly demonstrated that they discriminated reinforced from nonreinforced responses. Instructions not to perform nonreinforced imitations immediately eliminated these behaviors. It is suggested that social setting events may be largely responsible for generalized imitation.



256 MOTOR Generalized Imitation

Steinman, W. M., & Boyce, K. .

"Generalized imitation as a function of discrimination difficulty and choice"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 11, 251-265

PURPOSE: To determine the effect of discrimination difficulty and methods of assessment on generalized imitation.

SUBJECT CHARACTERISTICS: Four girls (aged 5 yrs. 5 mo. to 5 yrs 7 mo.) enrolled in public kindergarten.

MODEL CHARACTERISTICS: female adult E also served as M

INDEPENDENT VARIABLES: Reinforcement; Nonreinforcement; Single Presentation; Choice Presentation

DEPENDENT VARIABLES: S's discriminate imitation of both reinforced and nonreinforced responses.

MATERIALS: Beads were used as token reinforcers, exchangeable for a toy previously selected by S.

PROCEDURE: Seven phases with 36 trials in each session using single presentation or presentation with response choice and reinforcement or nonreinforcement for imitative responses. New responses were introduced.

RESULTS: Ss imitated E or M imitatively on the choice trials even though they continued to imit the same nonreinforced responses on the single-presentation trials. Similarly, when the reinforcement contingencies were reversed by reinforcing the previously nonreinforced imitations, only the behavior on the choice trials was affected.

## 269 MOTOR Generalized Imitation

Waxler, C. Z., &amp; Yarrow, M. R.

"Factors influencing imitative learning in preschool children."

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1970, 9, 115-130

- PURPOSE:** Develop generalized imitation in preschool children.
- SUBJECT CHARACTERISTICS:** 20 girls and 19 boys, 4-5 years old from upper-middle class nursery school
- MODEL CHARACTERISTICS:** adult women Es performed as M as they told the story.
- INDEPENDENT VARIABLE:** Acquisition Conditions; Modeling; Instruction; Reinforcement Conditions of Extinction; Low, High Nurturance (attentiveness); Subject's decision to imitate ("you don't have to do these things") as instructed by M; Model Nonperformance.
- DEPENDENT VARIABLES:** Measure of imitative responses to reinforced and nonreinforced responses.
- MATERIALS:** Stories with reappearing characters, toys representing story animals
- PROCEDURE:** Baseline of imitative responding. When S learned to imitate M for responses requested or reinforced S then assigned to one of four conditions of extinction or model nonperformance. (1) E (M) continued performance of responses, but did not request or reinforce, nurturance (attentiveness) maintained at high level. (2) Same as 1, but low nurturance. (3) S told he could do those things (imitate) if he wanted to, but he didn't have to, high nurturance. (4) Same as III with low nurturance. (5) M nonperformance, M no longer performed responses, did not reinforce S's responses, high nurturance. When imitation had decreased E reinstated conditions for learning. Measured generality or durability of imitation. After relearning sessions,

## 169 MOTOR Generalized Imitation (Cont.)

## PROCEDURE:

E played with child, performing two previously reinforced and two new responses. Next day E again performed responses while talking with S, second E told story using either acquisition or extinction procedures.

## RESULTS:

Imitation of reinforced behaviors at high level. Generalized imitation also learned at high level. When reinforcement withdrawn imitation decreased similarly for previously reinforced and nonreinforced behavior regardless of treatment, taking much longer to decrease than produce imitation. Nurture had no effect on prolonging imitation for girls, but did for boys. Ss told that responding was their choice did not continue as long as those Ss not told. Reinforced and generalized imitation do not appear to be different response classes. Model nonperformance virtually stopped imitation.

## 273 MOTOR Generalized Imitation

Zahn, C. J., &amp; Farrow, M. R.

"Conditions influencing imitative performance"

PROCEEDINGS OF THE 76TH ANNUAL CONVENTION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, 1968, 3, 339-340

- PURPOSE:** To investigate the acquisition, extinction, relearning, and generalization of imitative responses using generalized imitation procedures with normal children, including the effects of instruction and of differential reinforcement, and the durability of these effects under postacquisition conditions.
- SUBJECT CHARACTERISTICS:** 11 girls and 10 boys, nursery school children
- MODEL CHARACTERISTICS:** two female experimenters also served as M
- INDEPENDENT VARIABLES:** Reinforcement or No Reinforcement for Imitation; Response Extinction Procedures; New Responses; Experimenters I and II.
- DEPENDENT VARIABLES:** S's acquisition, extinction, relearning and generalization of reinforced and non-reinforced imitative responses.
- MATERIALS:** E was established as "storyteller", meeting with S individually in experimental room. The behaviors to be imitated were modeled by E in the context of her storytelling.
- PROCEDURE:** Performance of the experimental behaviors were measured with E displaying responses that were later to be reinforced for imitation and those that were to receive no reinforcement, serving as measures of generalized imitation. Classical generalized imitation procedures were then used. S was then exposed to one of three extinction behaviors, then resuming learning. New responses and a new E were introduced.

## 273 MOTOR Generalized Imitation (Cont.)

## RESULTS:

Training by instructions to match E's Reinforced imitation behavior and reinforcement for such matching was effective in producing a very high rate of imitation. Imitation of the nonreinforced imitative behavior was similar. Under the three conditions intended to produce response decrement, the predominant trend was one of decrease for both reinforced and nonreinforced imitative behavior; but, how quickly or how gradually imitation decreased and the extent of its decrease varied with the conditions. When E no longer performed reinforced imitations and nonreinforced imitations, there was immediate and drastic dropout of both types of responses. Conditions of extinction resulted in similar patterns of decreased responding. With reinstatement of reinforcement of reinforced imitations, both reinforced and nonreinforced imitations returned to higher rates of responding; relearning did not proceed as rapidly as initial learning. When another person assumed the role of the regular E, responding continued at very nearly the same rate for reinforced and nonreinforced imitations. When learned reinforced and new nonreinforced imitations were displayed by the original E without reinforcement, imitation was all but absent the first session, and occurred in half the sample during the second session.

## 117 AFFECTIVE Emotional Valuation

Bandura, A., Ross, D., & Ross, S. A.

"A comparative test of the status envy, social power, and secondary reinforcement theories of identificatory learning"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1963, 67, 527-534

PURPOSE: To compare the social envy and social power theories of imitation identification.

SUBJECT CHARACTERISTICS: 36 boys and 36 girls in nursery school, 3-6 years of age and were drawn from white middle class residential areas

MODEL CHARACTERISTICS: adult male and female

INDEPENDENT VARIABLES: Sex of S; Sex of M who Controlled Reinforcers; Adult (vicarious) or Child (direct) Consuming Reinforcers; and Controller or other M as a Source of Imitation Behavior

DEPENDENT VARIABLES: simple motor responses, e.g., putting on a hat, marching

MATERIALS: common objects such as toys, stickers, consumables, etc.

PROCEDURE: The child was randomly assigned to one of two experimental groups or a control group. Each group involved two adult confederates and the child. In one experimental group, one adult controlled the resources and the other adult received them. In the second experimental group, one adult controlled the resources, the second adult was assigned a powerless role and the child was the recipient of the reinforcers. Following the experimental social interaction, the two adults performed contradictory responses and the child's selective imitation of each one of them was noted.

RESULTS: Children imitated the adult who possessed rewarding power rather than the competitor for rewards. Children who received direct reward displayed significantly more imitation than adult rewarded or control conditions.

137 AFFECTIVE Emotional Valuation

Lebus, R. L.

"Effects of brief observation of model behavior on conceptual tempo of impulsive children"

DEVELOPMENTAL PSYCHOLOGY, 1970, 2 (1), 22-32

PURPOSE: To assess level of change of conceptual tempo in impulsive children as a result of modeling.

SUBJECT CHARACTERISTICS: 50 boys and 50 girls from 8.2 to 10.5 years who had an impulsive conceptual tempo.

MODEL CHARACTERISTICS: male and female peer

INDEPENDENT VARIABLES: M; No M; Reflective- or Impulsive-Conceptual tempo

DEPENDENT VARIABLES: measure of reflective or impulsive conceptual tempo

MATERIALS: matching test which measured conceptual tempo

PROCEDURE: S in room, M came in and asked to take test at the same time. M took several questions, then gave reflective, impulsive or changing cues. S then took test.

RESULTS: Girls in experimental groups had scores higher than Control Ss. For boys, only the group observing the reflective M had any significant change. Observation of impulsive M produced no latency changes in boys or girls.

## 138 AFFECTIVE Emotional Valuation

Denney, D. R.

"Modeling effects upon conceptual style and cognitive tempo"

CHILD DEVELOPMENT, 1972, 43, 105-119

**PURPOSE:** Assess level of imitation of conceptual style and cognitive tempo.

**SUBJECT CHARACTERISTICS:** Second grade boys, analytic or relational conceptual style.

**MODEL CHARACTERISTICS:** adult female

**INDEPENDENT VARIABLES** M's & S's Analytic or Relational Conceptual Style; Reflective or Impulsive Cognitive Tempo of M; Analytic and Reflective Control Ss without M

**DEPENDENT VARIABLES:** measure of cognitive tempo and conceptual tempo

**MATERIALS:** conceptual style pretest, video tape of M

**PROCEDURE:** Ss given pretest to measure conceptual style  
Ss then shown on one of four video tapes depicting M as analytic with impulsive responses, analytic with reflective responses, relational with impulsive responses or relational with reflective responses.

**RESULTS:** The conceptual style of M had no effect on the cognitive tempo of S. When M's conceptual style was consistent with that of the observer, latency scores decreased slightly for reflective Ms and decreased markedly for impulsive Ms. When M's conceptual style was inconsistent with that of S, latency scores increased markedly for reflective Ms. Cognitive tempo of M had significant effect on the latencies of response made by S. Ss who observed reflective Ms lengthened their latencies of responses. No indirect effect of the cognitive tempo of M on the conceptual styles of Ss.



165 AFFECTIVE Emotional Valuation

Hetherington, E. M., & Frankie G.

"Effects of parental dominance, warmth, and conflict on imitation in children"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 6 (2), 119-125

PURPOSE: To investigate the effects of parental dominance, warmth and conflict on the imitation of parents by boys and girls.

SUBJECT CHARACTERISTICS: 80 males and 80 female nursery and kindergarten children, probably lower middle class, 4 years 4 months to 6 years 5 months

MODEL CHARACTERISTICS: parent M

INDEPENDENT VARIABLES: High or Low-Conflict Home; Mother or Father Dominant; Mother and Father Warmth Combinations; Sex

DEPENDENT VARIABLES: imitation of mother, imitation of father

MATERIALS: toys, Structure Family Interaction Task (questionnaire)

PROCEDURE: Parents were given the Structure Family Interaction Task (questionnaire). Ss were then divided on the basis of this questionnaire into high conflict homes, low conflict home; mother dominant group, father dominant group, mother and father warmth combinations. Parents alternately performed behaviors appropriate to adults, such as golf putting in a free play session. The behaviors were postural, motor, and verbal. Children were then given a free play session.

RESULTS: The dominant parent was imitated more in a mother dominant home. The parent high in warmth was imitated more than the parent low in warmth. In the mother dominant group both boys and girls imitated the mother more. Under the father dominant group boys imitated the father more while girls continued to imitate the mother. Maternal warmth interacts significantly with sex of S while paternal warmth facilitates imitation to an equal degree in

## 165 AFFECTIVE Emotional Valuation (Cont.)

## RESULTS:

boys and girls. Results suggest that in a stressful home situation with high conflict there is more imitation of the dominant parent than in a low conflict home. Under high conflict with both parents in low warmth there is a significant tendency for both boys and girls to imitate the dominant parent regardless of sex of the parent. If either the nondominant parent is warm or the conflict is reduced there is a trend toward less imitation of the dominant parent. This trend does not hold in the case of boys with a dominant father.

## 179 AFFECTIVE Emotional Valuation

Liebert, R. M., &amp; Fernandez, L. E.

"Effects of vicarious consequences on imitative performance"

CHILD DEVELOPMENT, 1970, 41, 847-852

- PURPOSE: To test the hypothesis that observers use vicarious consequences to infer what their own outcomes are likely to be.
- SUBJECT CHARACTERISTICS: 24 girls, 6-7 years old, in middle-class public school;
- MODEL CHARACTERISTICS: adult female
- INDEPENDENT VARIABLES: Vicarious Reward; Vicarious Punishment; No Vicarious Consequences (Control)
- DEPENDENT VARIABLES: imitation of commodity preferences of a female adult model.
- MATERIALS: Each of 12 different pairs of objects (each pair being of similar cost value) projected from a colored slide onto a screen (e.g., toy airplane and tank; red spool and blue spool)
- PROCEDURE: S observed M state preference for one of a pair of toys on slide. M was praised, criticized or received no comment on her choices. S shown slides twice, The first time she was asked to state her preference, then she was asked to name the toy that the M had preferred. Matching responses received a reward.
- RESULTS: Ss exposed to vicarious reward showed more spontaneous imitation than those who had seen the model perform without consequences, whereas Ss exposed to vicarious punishment showed less imitation than the controls in this situation. In contrast, the previously divergent experimental groups performed equally well when explicitly asked to reproduce the M's responses. Although the control group had also seen the M perform, they were able to reproduce fewer of her responses than the experimental groups on this second test.

## 180 AFFECTIVE Emotional Valuation

Liebert, R. M., &amp; Fernandez, L. E.

"Imitation as a function of vicarious and direct reward"

DEVELOPMENTAL PSYCHOLOGY, 1970, 2 (2), 230-232

- PURPOSE: To measure the effects of vicarious and direct reward on children's imitation of an adult M's preference choices on an array of commodities.
- SUBJECT CHARACTERISTICS: 48 4-6 yr. old white middle-class nursery school children
- MODEL CHARACTERISTICS: adult female E; adult male M
- INDEPENDENT VARIABLES: Vicarious or No Vicarious Reward; Direct or No Reward; M Present or Not Present for Imitation; Sex of S
- DEPENDENT VARIABLES: imitation of M's preference choices in presence of vicarious or direct reward
- MATERIALS: Each of 12 different pairs of objects (each pair being of similar cost value) projected from a colored slide onto a screen (e.g., toy airplane and a tank; red spool and blue spool).
- PROCEDURE: The task consisted of slides of toy pairs for which a preference was to be made. Baseline taken of S's choices. S then observed M make choices, receiving praise or no comment on his choice. M remained or left. S went through slides two more times, the first time stating her preference, and the second time recalling M's choices. S received reward or no reward for imitation.
- RESULTS: Both vicarious and direct reward significantly enhanced matching responses and these factors were additive in their effects. None of the remaining variables significantly influenced imitative performance. Inference: The overall pattern of results is discussed in terms of the central role of incentive in imitation and the hypothesis that vicarious reward may serve primarily to enhance attention to the relevant modeling cues.

## 186 AFFECTIVE Emotional Valuation

Liebert, R. M., Sobol, M. P., & Copeman, C. D.

"Effects of vicarious consequences and race of model upon imitative performance by black children"

DEVELOPMENTAL PSYCHOLOGY, 1972, 6 (3), 453-456

- PURPOSE:** To assess effects of model race and vicarious reinforcement vs punishment on the level of imitative choice behavior of black subjects.
- SUBJECT CHARACTERISTICS:** Black first and second grade children
- MODEL CHARACTERISTICS:** Black and white adult males
- INDEPENDENT VARIABLES:** Race of M; Vicarious Reinforcement; No Reinforcement or Punishment
- DEPENDENT VARIABLES:** number of modeled responses correctly recalled by Ss
- MATERIALS:** slides with pairs of items. S to select which item he preferred.
- PROCEDURE:** Ss assigned randomly to one of 12 conditions. Each S observed either a Black or white M perform the choice task. S then asked which of the objects he preferred. In the reinforcement task, the M was reinforced verbally by E. In the no reinforcement task, the M was not reinforced, the E said nothing. In the vicarious punishment treatment, the E told M that "That wasn't a good choice."
- RESULTS:** Those Ss assigned to the vicarious reinforcement condition produced significantly higher levels of recall of M's choices than those assigned to the vicarious punishment or no reinforcement conditions. Some effects may have been influenced by the race of the M. Those Ss who saw a Black M punished tended to have extremely low recall scores. However, those Ss who saw white Ms rewarded may have performed exactly the opposite choices for fear of being punished.

## 182 AFFECTIVE Emotional Valuation

Liebert, R. M., Fernandez, L. E., &amp; Gill, L.

"Effects of a 'friendless' model on imitation and prosocial behavior"

PSYCHONOMIC SCIENCE, 1969, 16 (2), 81-82

- PURPOSE:** To explore the effects of ascribing the social characteristic of "friendlessness" to a peer model on children's acquisition and imitation of his modeled behaviors, and to determine whether this verbal description would also differentially arouse prosocial behavior toward him.
- SUBJECT CHARACTERISTICS:** 36 boys enrolled in summer day camp, divided into two age groups: 6-8 (CA = 7.17) and 9-11 (CA = 9.67);
- MODEL CHARACTERISTICS:** 9 yr. old boy peer
- INDEPENDENT VARIABLES:** Age of S; Neutral M; Friendless M; No M
- DEPENDENT VARIABLES:** Change of stated commodity preferences to that of M; and prosocial behavior toward the M (i.e., donating tokens for him).
- MATERIALS:** slides depicting pairs of objects from which preference choices were to be made, film with modeling cues, donation box
- PROCEDURE:** Baseline taken of S's preference with slides. S repeated task or shown film of a neutral M or a M reputed to being disliked. S shown slides and made preference choices. Slides then shown again with S being asked to recall M's choices, mention of tokens for correct responses were made. S then shown slides again, receiving tokens for correct responses. S told that M didn't get any tokens, and that some of the children had given Mike, the Friendless M, their tokens. S given opportunity to give tokens to Mike and to exchange his own tokens for prizes (the more tokens, the better the prize).

## 182 AFFECTIVE Emotional Valuation (Cont.)

## RESULTS:

Significant imitation effects were found for both the Neutral and Friendless model groups when compared with a control group. Prosocial behavior was enhanced by the "friendless" M, and all modeling groups showed almost perfect acquisition of the M's preferences. Younger children exhibited slightly more changes in preference than older ones; however, there was no significant age effect enhancing prosocial behavior toward the "friendless" M.

## 207 AFFECTIVE Emotional Valuation

Mischel, W., &amp; Grusec, J.

"Determinants of rehearsal and transmission of neutral and aversive behaviors"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 3 (2), 197-205

- PURPOSE: To demonstrate the occurrence of both rehearsal and transmission of aversive behavior investigate the relative effectiveness of noncontingent reinforcement by the model and his control over future resources in producing this rehearsal and transmission; and compare the determinants of the rehearsal and transmission of such initially aversive behaviors with those neutral behaviors of the model.
- SUBJECT CHARACTERISTICS: 56 Stanford nursery school children ranging in age from 37 to 64 mo.; 31 boys and 25 girls
- MODEL CHARACTERISTICS: adult female
- INDEPENDENT VARIABLES: High Noncontingent or Low Reward; High or Low Future Control; Aversive Behavior; Observation of Neutral Behavior; Sex of S
- DEPENDENT VARIABLES: Rehearsal and reproduction of M's behavior in the presence of M. The transmission of neutral or aversive behaviors to the clown in the M's absence.
- PROCEDURE: M was presented as warm, nurturant and having attractive resources at her disposal, or as responding minimally to the S and having less attractive toys at her disposal. M said she was a new, permanent or temporary teacher. S played cash register game with M. M performed novel but neutral behaviors, or was aversive to S through criticism and removal or delay of reward. S was then asked to show a person dressed as a clown how to play the game.
- RESULTS: No significant sex differences were found. Significantly more Ss rehearsed both aversive and neutral behaviors when the M was both highly rewarding and had high future control.



## 207 AFFECTIVE Emotional Valuation (Cont.) . . .

## RESULTS:

Comparison of Ss in the two control groups showed that rewardingness significantly affected the rehearsal of neutral but not aversive behavior. Rewardingness significantly increased the rehearsal of neutral but not aversive behaviors, whereas control affected the rehearsal of both aversive and neutral behaviors. The transmission of aversive behaviors was increased by the M's initial rewardingness but not by her control.

## 211 AFFECTIVE Emotional Valuation

O'Connor, Robert E.

"Modification of social withdrawal through symbolic modeling"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1969, 2 (1), 15-22

PURPOSE:	To test efficacy of symbolic modeling as a treatment to enhance social behavior in preschool isolates.
SUBJECT CHARACTERISTICS:	13 "isolates" and 26 "non-isolates" nursery school children
MODEL CHARACTERISTICS:	film of socially interactive peer models, four girls and two boys, 4-7 years old
INDEPENDENT VARIABLES:	M with film of socially-interactive peers, Control with film of dolphins
DEPENDENT VARIABLES:	measure of social interaction scores of direct social interchange
MATERIALS:	sound film of peers engaged in progressively more active social interaction narrated by women or a film with no human characters, of dolphins with music soundtrack.
PROCEDURE:	Children chosen as "isolates or "non-isolates" were shown either the modeling or control film, then returned to classroom and observed for 32 consecutive 15-second intervals.
RESULTS:	Control children remained essentially unchanged as did non-isolates. Isolate Ss markedly increased social interaction levels.

## 223 AFFECTIVE Emotional Valuation

Ridberg, E. H., Parke, R. D., & Hetherington, E. M.

"Modification of impulsive and reflective cognitive styles through observation of film-mediated models"

DEVELOPMENTAL PSYCHOLOGY, 1971, 5.(3), 369-377

- PURPOSE:** To effect change in cognitive style of subject as a result of watching model of opposite cognitive style perform successfully.
- SUBJECT CHARACTERISTICS:** 100 white fourth grade boys selected on basis of IQ and cognitive style
- MODEL CHARACTERISTICS:** white male peer M
- INDEPENDENT VARIABLES:** M; No M; Impulsive or Reflective Cognitive Style of M; Scanning or No Scanning; Verbalization or No Verbalization of Strategies
- MATERIALS:** Ss were given MFF tests at three intervals: prior to study, immediately after viewing video film of successful model of either impulsive or reflective cognitive style, and 1 week after viewing film.
- PROCEDURE:** Ss shown one of five video films in which the M responded in a style opposite to their own cognitive style. Verbalization of style and demonstration of scanning strategy were also used as variables. Impulsive strategy M stressed responding quickly, picking first that appeared correct and description of strategy. Reflective strategy stressed responding slowly, avoids choosing first one that appears correct, description of strategy.
- RESULTS:** Changes in latencies remained stable after 1 week. High and low IQ Ss were able to benefit from different cues in changing latency of responses. High IQ Ss used either single scan or verbal cue more effectively than double cue or no cue. Low IQ Ss benefitted

223 AFFECTIVE Emotional Valuation (Cont.)

RESULTS:

more from combined cues. The cognitive style of reflective Ss slightly modified by exposure to impulsive M. Increase in errors coupled with an increase in response time. High IQ reflective Ss had longer latencies and fewer errors than low IQ Ss following viewing of impulsive M.

## 258 AFFECTIVE Emotional Valuation

Thelen, M. H.

"Long-term retention of verbal imitation"

DEVELOPMENTAL PSYCHOLOGY, 1970, 3 (1), 29-31

- PURPOSE:** To assess long term retention of imitative behavior.
- SUBJECT CHARACTERISTICS:** 38 boys and girls, ages 10-12 in Roman Catholic schools
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** M Positive Consequences (Vicarious Reinforcement); M Negative Consequences (Vicarious Punishment); M No Consequences; Control; Sex of S
- DEPENDENT VARIABLES:** number of self-blame statements made
- MATERIALS:** time; 24 playing cards, a board divided into 4 equal sections, each identified by a different suit.
- PROCEDURE:** First testing--Ss observed a film M sorting cards according to the suit of the previous card in the stack. On four trials the M was told the time was up and was failed, on the 5th trial the M was passed. After each fail trial the M made self-blame statements. E made supporting statements to the M in the positive consequences condition, made critical statements in the negative consequences conditions and made no statements in the no consequences condition. The Controls did not observe the film. The Ss then performed the same card sorting task. Second testing--RECALL--A follow-up was conducted 7 to 7½ months later. Ss were given the same card sorting task.

258 AFFECTIVE Emotional Valuation (Cont.).

RESULTS:

No significant sex differences. In the initial testing the experimental group made more self-blame statements than the control group. In the recall test the no consequences group and the negative consequences group made the most self-blame statements.

110 .AFFECTIVE Desensitization

Bandura, A., Grusec, J. E., & Menlove, F. L.

"Vicarious extinction of avoidance behavior"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 5 (1), 16-23

- PURPOSE:** Investigate the extinction of avoidance responses through observation of modeled graduated approach behavior toward a feared stimulus without any adverse consequences to the M.
- SUBJECT CHARACTERISTICS:** 24 boys and 24 girls from 3-5 years chosen from three nursery schools on the basis of their high fearful and avoidant responses to dogs.
- MODEL CHARACTERISTICS:** two 4 year old boys unknown to Ss who were unafraid of dogs
- INDEPENDENT VARIABLES:** M Positive Context; M Neutral Context; Exposure Positive Context; Positive Context
- DEPENDENT VARIABLES:** measure of approach response scores in interaction tasks with dog
- MATERIALS:** dog with playpen, room, party accessories, treats for dog
- PROCEDURE:** Ss tested and selected for fearful and avoidant behavior in interaction with dog. Eight ten-minute sessions on four consecutive days with four Ss at a time. M Positive Context, Ss in party atmosphere with treats, prizes and stories. M and dog entered room. Over the sessions M interacted with dog in graduated fear-provoking displays. Neutral Context, same graduated modeling sequence without party atmosphere. Exposure Positive Context, party atmosphere, dog present without M. Positive Context, Ss had parties, but no dog or M present. Test readministered with two dogs. Evaluation of same performance task given one month later.

## 120 AFFECTIVE Desensitization (Cont.)

## RESULTS:

No difference in responses between posttreatment assessment and follow-up. Modeling-Positive Context and Modeling Neutral Context Ss had significantly more approach behavior. No significant difference between two modeling conditions or two control groups.



## 115 AFFECTIVE Desensitization

Bandura, A., &amp; Menlove, F. L.

"Factors determining vicarious extinction of avoidance behavior through symbolic modeling"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1968, 8 (2), 99-108

- PURPOSE:** To test hypothesis that magnitude of vicarious extinction is partly governed by diversity of aversive modeling stimuli which are neutralized by S's susceptibility to emotional arousal.
- SUBJECT CHARACTERISTICS:** 32 girls and 16 boys from 3-5 years enrolled in Stanford Nursery School who exhibited fearful behavior to dogs
- MODEL CHARACTERISTICS:** boys and girls of varying ages who fearlessly interacted with dogs
- INDEPENDENT VARIABLES:** Sex; Single M; Multiple M; Susceptibility to Emotional Arousal
- DEPENDENT VARIABLES:** measure of extinction effects of avoidance interaction in tasks with dogs
- MATERIALS:** Films of M(s) fearlessly interacting with dogs, dogs and dog treats
- PROCEDURE:** Standardized test of avoidance behavior with dogs administered to identify fearful children. Mothers rated children on fear levels toward animals, inanimate objects, and interpersonal fears. Treatment Conditions, eight movies over period of days, with either Single M or Multiple Ms interacting with dog in gradually increasing fear-provoking tasks. Control Ss shown films of Disneyland and Marineland. Ss administered avoidance test, follow-up appraisal given one month later.
- RESULTS:** Single and Multiple M significantly lowered avoidance, but only Multiple M effective in most threatening interaction tasks. No

## 115 AFFECTIVE Desensitization (Cont.)

## RESULTS :

change between Posttreatment and Follow-Up for Single-M, but Ss in Multiple M even bolder in Follow-Up. Susceptibility to emotional arousal unrelated to avoidance behavior in Single M, but negatively correlated to avoidance behavior in Multiple M. No significant sex differences.

**168 AFFECTIVE Desensitization**

Hill, J. H., Leibert, R. M., & Mott, D. E. W.

"Vicarious extinction of avoidance behavior through films: An initial test"

PSYCHOLOGICAL REPORTS, 1968, 22, 192

- PURPOSE:** To duplicate Bandura's experiment that used live dogs and live models by using a film only.
- SUBJECT CHARACTERISTICS:** 40 preschool boys - 18 of which were retained because they did not approach the dog in the pretest phase I.
- MODEL CHARACTERISTICS:** peer boys, 4 and 10
- INDEPENDENT VARIABLES:** M; No M
- DEPENDENT VARIABLES:** approach to a live dog (walking close, petting and giving a frankfurter)
- MATERIALS:** film of two fearless peer Ms playing with dog; live dog
- PROCEDURE:** Ss were pretested for initial avoidance of a dog. Ss that did not proceed to the dog were retained. These Ss were divided into two groups and matched for initial avoidance. Half of the retained Ss saw a film of two peer Ms interacting fearlessly with a dog. The other half saw no film. Ss were given a chance to approach pet and feed the real dog.
- RESULTS:** Eight of the nine boys in the film group were willing to approach the dog after the film, pet and feed it. Only three of the boys out of nine in the control group approached the dog.

197 AFFECTIVE Desensitization

Mann, J., & Kosenenthal, T. L.

"Vicarious and direct counterconditioning of test anxiety through individual and group desensitization"

BEHAVIOUR RESEARCH AND THERAPY, 1969, 7, 359-367

- PURPOSE:** Examine effects of vicarious and direct desensitization on individual and group treatment of test anxiety.
- SUBJECT CHARACTERISTICS:** Ss referred by school counselor with S having history of at least one incident of test anxiety. Experimental Ss--27 female and 23 male, 12-13 year-old seventh graders. Control Ss--12 female and 9 male 13-14 year-old eighth graders who were all students at the same Tucson, Arizona junior high school.
- MODEL CHARACTERISTICS:** Peer Ms who had been treated for test anxiety, male and female
- INDEPENDENT VARIABLES:** Direct--Individual or Vicarious--Individual Treatment; Direct-Group; Group-Observing-Group; Group-Observing-Model; Sex of S
- DEPENDENT VARIABLES:** measure of test anxiety
- MATERIALS:** test anxiety and reading tests; desensitization hierarchy of test anxiety and reading level
- PROCEDURE:** Initial assessment taken for level of test anxiety and reading test, Ss ranked. Ss assigned to dyad (2 Ss) or group of 5 Ss. Treatment was direct or vicarious. Vicarious groups observed another group or Model. Test anxiety hierarchy used for desensitization. Assessment for test anxiety and reading level readministered.
- RESULTS:** Experimental Ss reduced test anxiety and improved reading scores. Females experienced greater reduction in test anxiety. No main effects for treatments although vicarious procedure showed slightly greater reduction in test anxiety and improvement in reading score.

**225 AFFECTIVE Desensitization .**

Ritter, B.

"The group desensitization of children's snake phobias using vicarious and contact desensitization procedures"

BEHAVIOUR RESEARCH AND THERAPY, 1968, 6, 1-6

- PURPOSE:** To investigate the effectiveness of vicarious and contact desensitization procedures for the group treatment of snake-avoidant children.
- SUBJECT CHARACTERISTICS:** 28 girls and 16 boys, ages 5-11, pretested to assess level of fear of snakes; ratio of boys and girls and level I and II avoiders was similar in each treatment condition.
- MODEL CHARACTERISTICS:** E was adult female, who also served as M; 5 peer Ms of "fearless" boys and girls were present at each session of vicarious desensitization condition.
- INDEPENDENT VARIABLES:** Contact Desensitization; Vicarious Desensitization; Control
- DEPENDENT VARIABLES:** Children's performance on a snake avoidance test prior to and following treatment.
- MATERIALS:** Schubot, 1966, snake avoidance test materials, including Posie, a 4-foot gopher snake
- PROCEDURE:** Preliminary assessment of snake avoidance was made, Ss divided into two levels of avoidance. Two treatments were spaced a week apart. Classical desensitization procedures were used with the use of peer Ms in Vicarious Desensitization and eventual peer modeling by bolder Ss in Contact Desensitization to demonstrate gradual snake-handling behaviors. Ss also took turns giving instructions on handling the snakes. Posttest assessment of snake avoidance behavior was taken.
- RESULTS:** There were not significant sex differences, and no significant effects due to initial

## 225 AFFECTIVE Desensitization (Cont.)

## RESULTS:

avoidance level on final performances by Ss. The following predicted results were obtained: (a) contact desensitization yielded significantly greater reductions in avoidance than did vicarious desensitization; (b) both desensitization groups demonstrated significantly larger avoidance decrements than did non-treated controls. During posttesting, 80% of the children receiving contact desensitization, 53.3% of those in the vicarious desensitization condition and none of the control children successfully completed the stringent terminal task of the avoidance test.

## 114 AFFECTIVE Moral Judgment

Bandura, A., &amp; McDonald, F. J.

"Influence of social reinforcement and the behavior models in shaping children's moral judgments"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1963, 67 (3), 274-281

## PURPOSE:

To test the relative efficacy of social reinforcement and modeling procedures in modifying moral judgmental responses considered by Piaget to be age specific. (Children below seven judge moral acts on amount of material damage, "objective responsibility" or orientation, while children above seven judge acts on basis of intent, "subjective responsibility" or orientation.

## SUBJECT CHARACTERISTICS:

84 children from an original group of 165 tested at baseline were chosen for experimental phase. They ranged from 5-11 years, and were students either at a Jewish religious school or a public elementary school.

## MODEL CHARACTERISTICS:

adult female students at Stanford University

## INDEPENDENT VARIABLES:

Sex; Age; Students at Jewish school; Students at Public School; Objective-Orientation of S; Subjective-Orientation of S; Objective Treatment; Subjective Treatment; Reinforcement

## DEPENDENT VARIABLES:

Percentage of Objective judgmental responses performed by subjective Ss and percentage of subjective judgmental responses made by Objective Ss.

## MATERIALS:

36 story pairs, one of each describing a well-intentioned act resulting in considerable material damage, and the other describing a selfishly or maliciously-motivated act resulting in little material damage.

## PROCEDURE:

Operant Level, all Ss given 12 story pairs to determine subjective or objective orientation. Experimental Treatment, 48 Subjective

## 114 AFFECTIVE Moral Judgment (Cont.)

## PROCEDURE:.

Ss and 36 Objective Ss divided into younger and older groups, randomly assigned to three conditions. M & S-Reinforced, first of story pairs read to M (explained as S), second to S. M responded and reinforced for responses opposite to S's moral orientation. S reinforced for moral judgment opposite to his orientation. M No Reinforcement, S not reinforced for responses. Reinforcement No M, S reinforced for moral judgments opposite to his orientation. Posttest, 12 more story pairs administered to S without M or reinforcement.

## RESULTS:

School made no significant different. M Reinforcement more effective with girls, boys more responsive than girls to M No Reinforcement. Subjectivity positively related to age, but unrelated to sex. M as effective as M Reinforcement. Reinforcement alone produced no significant change. Subjective morality increases with age, but exists at all levels, objectivity and subjectivity can be modified at all ages. Ss can respond to new stimuli consistent with M's pre-disposition, even without M present.



## 136 AFFECTIVE Moral Judgment

Cowan, P. A., Langer, J., Heavenrich, J., & Nathanson, H.

"Social learning and Piaget's cognitive theory of moral development"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1969, 11 (3), 261-274

- PURPOSE:** Replicate with extended analyses Bandura and McDonald's study on moral judgment of children, testing the theory that moral development is age-specific, has clear-cut stages, and has predetermined and necessary sequence stages.
- SUBJECT CHARACTERISTICS:** 38 boys and 42 girls from 5.6 to 12.6 years old from a Berkeley low-income elementary school
- MODEL CHARACTERISTICS:** female adult
- INDEPENDENT VARIABLES:** S with High, Tentative High, Low or Tentative Low Moral Judgment; Age; Sex; High or Low Conditioning
- DEPENDENT VARIABLES:** measure of moral judgments in response to conditioning for high or low level moral judgments
- MATERIALS:** 48 story pairs, each of one describing a well-intentioned act ending in large negative consequences and the other describing a mean-intentioned act ending in small negative consequences. Six of the story pairs had one good-intention act ending in small negative consequences paired with a bad-intentioned act ending in large negative consequences.
- PROCEDURE:** Ss given 12 pairs for assessment of low or high moral judgment. M and S alternated items with M answering with moral judgment opposite to that of Ss. Ss then posttested either immediately or two weeks after experimental phases with 18 pairs, six of which were the "switch" pairs.

## 136 AFFECTIVE Moral Judgment (Cont.)

## RESULTS:

Satisfactorily replicated Bandura and McDonald study. Ss imitated M's choice of naughtier child and gave same explanations. Tentative Ss scored closer to M's level than did High or Low Ss. For posttest, Ss who were conditioned up increased their level while Ss conditioned down tended to remain at the same level.

## 146 AFFECTIVE Affection

Fryrear, J. L., &amp; Thelen, M. H.

"Effect of sex of model and sex of observer on the imitation of affectionate behavior"

DEVELOPMENTAL PSYCHOLOGY, 1969, 1 (3), 298

**PURPOSE:** To determine the effects of sex of both the model and the observer on the imitation of affectionate behavior in absence of overt reinforcements.

**SUBJECT CHARACTERISTICS:** 30 boys and 30 girls in nursery school

**MODEL CHARACTERISTICS:** adult male and adult female

**INDEPENDENT VARIABLES:** Sex of M; Sex of S; No M

**DEPENDENT VARIABLES:** imitation of affectionate behavior

**MATERIALS:** audio visual film of M, toys including small clown

**PROCEDURE:** S watched film of male or female M interact affectionately with small clown chosen from a box of toys. S then allowed to play with the box of toys which included the clown.

**RESULTS:** M groups performed significantly more imitative responses than the Controls of the same sex. Girls imitated female M more than boys imitated the female M, and to a lesser extent the girls imitated the male M more than the boys. Girls with female M imitated more than girls with male M. There was no difference between the sex of M with boys.

## 242 AFFECTIVE Moral Judgment

Ross, S. A.

"Effects of intentional training in social behavior on retarded children"

AMERICAN JOURNAL OF MENTAL DEFICIENCY, 1969, 73 (6), 912-919

## PURPOSE:

To test the following hypotheses: (1) EMR children have lower levels of skills in logical thinking and social responses than normal children, (2) Training can increase skill in these two areas, (3) Training may increase level of knowledge of social responses to level of normal child.

## SUBJECT CHARACTERISTICS:

Two groups of Ss, EMR and Average Intelligence. None had gross motor, sensory nor emotional defects, nor were any on drugs that could affect learning ability. EMR Ss--19 boys and 13 girls from 4-10 years, all attending classes for educable MR. Average Ss--6 boys and 10 girls from 4-10 years, all enrolled in preschool or grade schools.

## MODEL CHARACTERISTICS:

adult and child dolls, child and animal puppets, live adult models

## MATERIALS:

Logical Thinking and Social Behavior tests, Training Program utilizing adult and child dolls, animal and child puppets and live adult Ms in different media of doll and puppet play and slides.

## PROCEDURE:

Logical Thinking and Social Behavior Tests administered to all three groups, no further work done with Average Group. Experimental Group received Logic and Social Training Program. Control Group received Creative Multi-Media Program. Both groups then re-tested. Logic test consisted of picture, doll play and puppet stories presenting premises and consequences, then asking S to state what he would do. Social behavior test consisted of doll play and live models presenting specific social interactions and asking S to state what should happen.

## 242 AFFECTIVE Moral Judgment (Cont.)

## PROCEDURE:

Objective of Logic and Social Training Program was to teach S types of social situations. Training over a period of two months. S observed and later participated in incidents which were discussed with E. Creative Multi-Media Program consisted of equal time with E, equal exposure to media and practice in responding to simple problems. The difference was that the incidents did not involve the logic or social behavior problems even though the same characters were used. Retested with Logical Thinking and Social Behavior Tests. Retention Test for 9 of the Experimental Ss given 43-94 days after the Posttest.

## RESULTS:

EMRs do have lower logical thinking and social behavior skill level, but training has effect as experimental group scored significantly higher in both areas. Control Group did improve somewhat. Experimental Group's posttraining social behavior scores were higher than Average Group's scores, but logical thinking scores for Experimental Group were still far below the Average Group. No difference between posttraining and retention scores.

249 AFFECTIVE Moral Judgment

Shelton, J., & Hill, J. P.

"Effects on cheating of achievement anxiety and knowledge of peer performance"

DEVELOPMENTAL PSYCHOLOGY, 1969, 1 (5), 449-455

- PURPOSE:** To assess effects of high, middle and low test anxiety on the level of cheating following information on peer's achievement level.
- SUBJECT CHARACTERISTICS:** 42 boys and 62 girls in 10th and 11th grades in urban and suburban high schools. Ss were white, middle-upper class and in college prep classes.
- MODEL CHARACTERISTICS:** peer standards of achievement
- INDEPENDENT VARIABLES:** High or Low Reference Group Performance; High, Low or Middle Anxiety Levels; Control
- DEPENDENT VARIABLES:** amount of S "cheating" with reference to the level of peer's achievement scores on tests
- MATERIALS:** anxiety test, creativity (story writing) test
- PROCEDURE:** Ss first asked to make as many words as possible from the letters in "generation". Ss then administered anxiety test to determine how they felt about tests. Ss then started creative story-writing test which they did not have time to finish. Ss were ranked on test anxiety, and assigned to success or failure condition with S being told whether his word scores on the first task were above or below a reference group. In the second session, Ss completed the story-writing task, and were then handed their word lists unmarked and a scoring form. Ss were told that they could keep the original test form, circle the number of words they had written on the scoring form to hand in. The average performance which was actually

249 AFFECTIVE Moral Judgment (Cont.)

PROCEDURE:

the success or failure reference group was also indicated on the scoring form.

RESULTS:

Knowledge of peer's achievement induces cheating only with Ss who have moderate to high levels of anxiety. Peer knowledge manipulations had different effects on cheating at the three anxiety levels. More cheating occurred in the success and failure conditions than in the control condition. The failure vs. control comparison was significant among moderately anxious subjects. No differences between conditions with Ss having low anxiety.

## 250 AFFECTIVE Moral Judgment

Slaby, R. G., &amp; Parke, R. D.

"Effect on resistance to deviation of observing a model's affective reaction to response consequences"

DEVELOPMENTAL PSYCHOLOGY, 1971, 5 (1), 40-47

**PURPOSE:** To test influence of social M on resistance to deviation.

**SUBJECT CHARACTERISTICS:** 66 boys and 66 girls from 5 years, 10 months to 8½ years

**MODEL CHARACTERISTICS:** young boy

**INDEPENDENT VARIABLES:** M Rewarded; M Punished; Negative Reaction of S; Positive Reaction of S; Sex of S

**DEPENDENT VARIABLES:** measure of resistance to deviation or deviations in playing or not playing with prohibited toys

**MATERIALS:** 5 films showing child M playing with prohibited toys, same toys in film used with Ss

**PROCEDURE:** S taken to room, seated at table with toys and told she couldn't play with them. S observed film of M playing with prohibited toys who was either rewarded or punished, and showed positive, negative or no affective reaction. E left, giving S dull book to read for 15 minutes. S observed.

**RESULTS:** Ss exposed to rewarded M deviated more and longer than Ss exposed to punished M. Rewarded M with positive affect reaction deviated more than no affective reaction which deviated more than negative affective reaction. Ss with punishment and positive affect deviated less than Ss with punishment and negative affect. Boys who saw rewarded M deviated more than punished M while consequences had no effect on girls.



## 252 AFFECTIVE Moral Judgment

Stein, A. H. . .

"Imitation of resistance to temptation"

CHILD DEVELOPMENT, 1967, 38, 157-169

- PURPOSE:** To assess influence of modeling on inhibition (or temptation).
- SUBJECT CHARACTERISTICS:** 84 fourth grade boys with a mean age of 9-8 years
- MODEL CHARACTERISTICS:** adult model
- INDEPENDENT VARIABLES:** Yielding or Resisting M; Prosocial or Idle Resisting Model; Control
- DEPENDENT VARIABLES:** Ss resisting or yielding to temptation following the observation of a M
- MATERIALS:** questionnaire on moral behavior, "film editing" task
- PROCEDURE:** Moral Behavior Questionnaire, survey of children's opinions, was given several weeks before the experiment. Questionnaire concerned situations where a boy yielded or resisted temptation. The experimental task consisted of S watching a machine which would indicate if the film, not shown in the experimental room but presumably visible in another room, had any scratches on it which would indicate editing was needed. Ss were exposed to a M who resisted temptation and performed a card-sorting task E had mentioned, a M who resisted temptation and performed the card task without being asked to do so, a M who resisted temptation and remained idle, a M who yielded to temptation and looked at the film, or no M. M in all conditions indicated an interest in seeing the film. S was then left alone to watch the film editing machine.
- RESULTS:** The yielding M is more effective in producing like results in the Ss than the resisting M. One possible explanation for this is that the resisting M is confirming the instructions given by E to the S, while the yielding M is setting a new "moral" standard because he presents new instructions through his behavior.

## 264 AFFECTIVE Moral Judgment

Walters, R. H., Leat, M., & Mezei, L.

"Inhibition and disinhibition of responses through emphathetic learning"

CANADIAN JOURNAL OF PSYCHOLOGY, 1963, 17 (2), 235-243

- PURPOSE:** To test the hypothesis that children who see a M punished for engaging in an activity forbidden to the Ss show greater response inhibition when tempted to engage in this activity than do children who see a M rewarded for engaging in this activity.
- SUBJECT CHARACTERISTICS:** 38 boys in Toronto, age 5, attending public kindergarten in a low socio-economic district
- MODEL CHARACTERISTICS:** four year old boy
- INDEPENDENT VARIABLES:** M Rewarded; M Punished; Accessibility of the toys; Control
- DEPENDENT VARIABLES:** touching the toys, latency of first deviation, number of deviations, weighted number of deviations (touching a close toy as opposed to touching one the S had to walk to), time spent in deviating, weighted times
- MATERIALS:** toys placed on the table, some closer to S than others; some wrapped, some unwrapped.
- PROCEDURE:** Ss saw the M in the film play with toys that the Ss themselves were not allowed to play with. In one condition the mother of the M came in and played with the child in a nurturant way. In another condition the mother came in and scolded the M. The control group did not see the film. Ss were then left alone with the toys they were not supposed to touch for 15 minutes.
- RESULTS:** The Ss in the M Reward group deviated more quickly and tended to spend more time deviating, when times were weighted for the seriousness of the deviation than did the Ss in the Control groups. Ss in the Punishment and Control Groups differed little from each other in this respect.

264 AFFECTIVE Moral Judgment (Cont.)

RESULTS:

The Punishment Ss deviated significantly less often than did Ss in the Control group, whereas the deviations for the Reward group and Control group did not vary.

## 265 AFFECTIVE Moral Judgment

Walters, R. H., &amp; Parke, R. D.

"Influence of response consequences to a social model on resistance to deviation"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1964, 1, 269-280

- PURPOSE:** To determine the effects of viewing a M who deviated and was rewarded, punished or experienced no consequences on the imitation of this deviant behavior. To further investigate the effects of removing a prohibition once it had been established on deviant behavior.
- SUBJECT CHARACTERISTICS:** 84 boys with a mean age of 5 years, 11 months
- MODEL CHARACTERISTICS:** peer M, six year old boy
- INDEPENDENT VARIABLES:** M Rewarded; M Punished; M No Consequences; No M; Prohibition; Prohibition Removed; Accessibility of Toys
- DEPENDENT VARIABLES:** number of times S deviates, latency of first deviation, total time for which he deviated, weighted deviation scores (the more accessible the toy the lower the weighted score).
- MATERIALS:** Toys that varied in their distance from the subject on a table; film of M
- PROCEDURE:** The film Ss were shown one of 3 films. In each film the M played with toys that the Ss had been instructed not to play with. In one condition the M's mother came in and rewarded him; in the second condition she punished him; in the third condition the M's mother did not reenter the room (no consequences). A fourth group of Ss did not see the film.
- RESULTS:** The M-Reward group and the M No-Consequences group deviated more than No M group. No significant differences between the M-Reward group and the M No-Consequences group. The Ss in the M-Punishment group deviated more quickly

## 265 AFFECTIVE Moral Judgment (Cont.)

## RESULTS:

and exhibited more deviant behavior than the No M group but the difference was not significant. When the prohibition was removed, the M-Punishment imitated the behavior to as great an extent as the other two experimental groups.

## 266 AFFECTIVE Moral Judgment

Walters, R. H., Parke, R. D., & Cane, V. A.

"Timing of punishment and the observation of consequences to others as determinants of response inhibition"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1965, 2, 10-30

- PURPOSE:** To test the hypotheses that children receiving punishment at beginning of responses deviate less than those receiving punishment at the end, that children observing M punished for deviant acts will deviate less than those observing M rewarded, that observational learning is independent of the consequences to M.
- SUBJECT CHARACTERISTICS:** 80 kindergarten and first grade boys, mean age 6 years, 5 months
- MODEL CHARACTERISTICS:** 6 year old boy
- INDEPENDENT VARIABLE:** Early or Late Punishment; No M (no film); M Rewarded; M Punished; No Consequences
- DEPENDENT VARIABLE:** resistance to deviation as measured by latency of deviation, number of times S deviated and total time of deviation, correct and incorrect responses to observational learning in construction task
- MATERIALS:** nine pairs of toys (one attractive--well detailed and of interest to boys, and one unattractive--smaller, sex-inappropriate); film of child playing with prohibited toys--rewarded, punished or having no consequence for acts
- PROCEDURE:** Punishment Training--S presented with toy pairs, asked to pick one, attractive toy always said to be for another child (punished choice, S told either before he touched prohibited toy, early punishment, or after S had held toy for awhile, late punishment). Resistance to Deviation--other toys revealed, S told they were for other child. S shown

## 266 AFFECTIVE Moral Judgment (Cont.)

## PROCEDURE:

film of boy being punished, rewarded or receiving no consequence for playing with prohibited toys. E left room, giving S dictionary to read until she came back. E returned and gave S one toy at a time, asking him to construct or play with it as M had.

## RESULTS:

No significant differences with number of punishments received (inappropriate choices of toys). M-Rewarded and No-Consequences deviated sooner, more often and for longer periods of time than M Punished. Early-Punishment showed greater resistance to deviation than Late-Punishment. Timing of punishment had no effect on matching of observational learning. M-Punished and No-M did not differ significantly on matching construction responses. M-Rewarded and No-Consequence made significantly more matching responses.

## 126 AFFECTIVE Altruism

Bryan, J. H.

'Model affect and children's imitative altruism'

CHILD DEVELOPMENT, 1971, 2061-2065

- PURPOSE:** To investigate the impact of immediate and delayed vicarious reinforcements upon children's imitative self-sacrificing behavior.
- SUBJECT CHARACTERISTICS:** 36 first and second grade boys
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** Immediate-Affective Expression; Delayed-Affective Expression, Verbal Charity; No Verbal Charity
- DEPENDENT VARIABLES:** donation-score, sequence of motor behavior, imitation donation score
- MATERIALS:** bowling game, pre-set scores, pennies, S cannister, March of Dimes Cannister
- PROCEDURE:** S observed film of M playing game, giving 2/3 of pennies to March of Dimes Cannister, and giving or not giving affective verbal expressions praising her actions, either immediately or delaying verbal expression. Ss then played the game, having been instructed to take three pennies for each score of 20, and to put money either in own or March of Dimes cannister. Postexperimental questionnaire.
- RESULTS:** The closer the affect expression to the donation behavior, the greater the S's donation score. Highest donation scores obtained by Ss who observed Verbal-Exhortation. No significant difference between conditions on imitation donation scores. Imitative sequence scores showed a significant effect of M effect. Results of the questionnaire showed that Ss realized that M's affect response was due to her giving to charity. Ss in the Charity-Exhortation group found M to be significantly more attractive than Ss in the Nonexhortation group.



## 127 AFFECTIVE Altruism

Bryan, J. H., Redfield, J., & Mader, S.

"Words and deeds about altruism and the subsequent reinforcement power of the model"

CHILD DEVELOPMENT, 1971, 42, 1501-1508

**PURPOSE:** To study the effectiveness of social reinforcement by a model who demonstrated varying degrees of motor (practice) and verbal (exhortations) self-sacrificing behaviors.

**SUBJECT CHARACTERISTICS:** 96 second and third grade Caucasian middle-class children

**MODEL CHARACTERISTICS:** college student female

**INDEPENDENT VARIABLES:** M Practices Charitable Behavior; M Practices Selfish Behavior; M Exhorts Charity; M Exhorts Greed; Neutral M; Reinforcement

**DEPENDENT VARIABLES:** number of lever presses for the blue light compared to number of lever presses for M&Ms indicating charitable or selfish behavior

**MATERIALS:** two-press lever apparatus yielding blue light or M&Ms

**PROCEDURE:** Ss observed video-tape of M playing bowling game and using reward either charitably or selfishly. M verbally exhorted charity, greed or neutral verbalizations. Ss played lever-pressing game. Ss reinforced for choosing blue light (self-denial), other half not reinforced. Ss asked to recall M's behavior on film.

**RESULTS:** M who practiced charity, exhorted charity and rewarded self-denial responses elicited the greatest number of self-denial responses from S. M who exhorted and practiced charity but did not reward self-denial responses elicited least number of self-denial responses. S's judgments of M's niceness were determined by exhortations and practice, not reward.

## 141 AFFECTIVE Altruism

Elliot, R., &amp; Vasta, R.

"The modeling of sharing: Effects associated with vicarious reinforcement, symbolization, age and generalization"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1970, 10, 8-15

**PURPOSE:** To assess the effects of symbolization and observed reward and of age and sex on the modeling of sharing.

**SUBJECT CHARACTERISTICS:** 12 boys and 12 girls, 5-7, from lower and lower middle class Head Start classes

**MODEL CHARACTERISTICS:** six year old boy

**INDEPENDENT VARIABLES:** Sex; Age; M Sharing; M Sharing with Reward; M Sharing Symbolization; No M

**DEPENDENT VARIABLES:** number of candies and pennies shared

**MATERIALS:** bags of candy, box for a poor boy, video tapes of M

**PROCEDURE:** S given candy bag, told he could put some in box for a poor boy. S shown tape of M sharing and receiving or not receiving a reward, and being or not being told why it is good to share. S then given opportunity to share candy and pennies.

**RESULTS:** Symbolization was the most powerful condition while there was no difference between Reward and No Reward. Sharing associated with age. Boys shared candy more than pennies while the opposite held for girls.

149 AFFECTIVE Altruism

Grusec, J. E.

"Power and internalization of self-denial"

CHILD DEVELOPMENT, 1971, 42, 93-105

**PURPOSE:** Two experiments conducted to study the effect of social power in facilitation imitation of aversive behaviors.

**SUBJECT CHARACTERISTICS:** 24 boys and 24 girls, 7-11

**MODEL CHARACTERISTICS:** adult female and adult male (same sex M)

**INDEPENDENT VARIABLES:** High and Low Nurturance; High and Low Power M; Sex

**DEPENDENT VARIABLES:** imitation of altruism (Experiment I), imitation of standard of self-reward (Experiment II)

**MATERIALS:** toys, bowling game with preset scores, marble dispenser

**PROCEDURE:** Experiment I: S played with toys, interacting with warm or neutral M. High-Power M told S he was selecting children to tour the Toronto Airport. S observed M play bowling game, giving half of prize to poor boy. S then played the game. Experiment II: Ss exposed to High or Low Power M, observed M play the game, no mention of poor boy. S then played the game.

**RESULTS:** Experiment I: Ss in High-Power shared more than those with Low-Power M. Nurturant group shared less than Low Nurturant group. Experiment II: M's Power was an effective determinant of the degree to which Ss imitated self-denial behavior (adoption of standard of self-reward).

## 151 AFFECTIVE Altruism

Grusec, J. E., & Skubiski, S. L.

'Model nurturance, demand characteristics of the modeling experiment, and altruism'

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1970, 14,(4), 352-359

**PURPOSE:**

To test the hypothesis that model nurturance does not increase the imitation of aversive behaviors and that it may even decrease their imitation and that observed behavior in so-called imitation studies really only gives information to subjects about how they themselves are expected to behave.

**SUBJECT CHARACTERISTICS:**

15 boys and 15 girls from the second grade, 25 boys and 25 girls from the fifth grade

**MODEL CHARACTERISTICS:**

adult male

**INDEPENDENT VARIABLES:**

High Nurturance M; Low Nurturance M; No M; Verbalization; Performance; Grade; Sex of S

**DEPENDENT VARIABLE:**

mean number of donated marbles

**MATERIALS:**

miniature bowling game with predetermined scores, reinforcing marbles, bowl for charity toys

**PROCEDURE:**

Ss exposed to either a Nurturant or Non-Nurturant M. Half the Nurturant and half the Non-Nurturant Ss saw M perform in a specific way in a miniature bowling game. The other half of the Ss only heard the model verbalize about the appropriate way to behave. In the Performance condition M played the game, donating half of his earnings to charity. In the Verbalization condition M verbalized that the appropriate thing to do seemed to be to give away half the earnings to charity. Ss then played the game alone.

**RESULTS:**

No main effect of either nurturance, sex of S, or grade on the amount of sharing. All Ss in the performance condition and the girls in the verbalization condition shared equally. The remaining verbalization Ss did not differ from the no model control group (virtually no sharing).

## 158 AFFECTIVE Altruism

Harris, M. B.

'Models, norms and sharing'

PSYCHOLOGICAL REPORTS, 1971, 29, 147-153

## PURPOSE:

To investigate whether or not the salience of a norm is responsible for facilitation the effect of observing an altruistic model-- to assess if a child is simply imitating the model's specific responses or demonstrating more generalized altruism (purpose of the questionnaire).

## SUBJECT CHARACTERISTICS:

156 third and fifth grade boys and girls

## MODEL CHARACTERISTICS:

adult female

## INDEPENDENT VARIABLES:

M Shares with S; M Shares with a Charity;  
M Does not Share; Age

## DEPENDENT VARIABLES:

number of marbles shared; responses to the  
questionnaire

## MATERIALS:

box with signal and random lights, marble  
dispenser, jars labeled Mental Health or  
Toys for Tots

## PROCEDURE:

Ss told that marbles could be won when the lights were on on the box, and could be shared. M and S played, M won most of the marbles, and either shared with S, put in charity jars or didn't share. M and S played again, M left. S allowed to do with marbles as he wished. S asked questions about the rules.

## RESULTS:

Control Ss shared much less in all but Toys for Tots group. Ss with M that shared with charity also shared more with charity than Ss who had received marbles from M who shared more with the M. Fifth grade Ss shared significantly more than third grade Ss. Ss exposed to sharing showed only a tendency to mention sharing on questionnaire.

## 159 AFFECTIVE Altruism

Harris, M. B.

'Reciprocity and generosity: Some determinants of sharing in children'

CHILD DEVELOPMENT, 1970, 40, 313-328

- PURPOSE:** To investigate the effects of observing generosity or receiving generosity on future sharing behavior. Also to investigate the effects of vicarious reinforcement.
- SUBJECT CHARACTERISTICS:** 168 boys and girls, fourth and fifth grade
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** M shares with S; M shares with Charity; Vicarious or No Reinforcement; M refuses to Share; M has No Chance to Share; Sex of S
- DEPENDENT VARIABLES:** number of chips subject shares with charity or with M
- MATERIALS:** box with large signal lights and smaller lights that flashed in random patterns; chip dispenser, all operated by remote control
- PROCEDURE:** M and S played game receiving chips as prize. M shared with S or charity and was praised or not praised for sharing, or M refused to share or had no chance to share. M and S played again with S winning most of the chips. S left alone to distribute chips.
- RESULTS:** No significant age or sex differences in number of chips shared. Ss in the M share with S group shared no more than the M share with charity group, however those receiving chips from the M tended to share with her. The M share with charity group tended to donate to charity. The groups that did not observe sharing did not share. Vicarious reinforcement was not a significant contributory factor.

## 164 AFFECTIVE Altruism

Hartup, W. W., &amp; Coates, B.

"Imitation of a peer as a function of reinforcement from the peer group and rewardingness of the model"

CHILD DEVELOPMENT, 1967, 38 (4), 1003-1016

- PURPOSE:** To study Ss general history of reinforcement from persons resembling the M and its effect on the S's rewardingness on imitation.
- SUBJECT CHARACTERISTICS:** 56 preschool children ranging in age from 3.9 years to 5.4 years
- MODEL CHARACTERISTICS:** peer
- INDEPENDENT VARIABLES:** Frequent or Infrequent Reinforcement from Peers; Non-Rewarding Peer M or Rewarding Peer M
- DEPENDENT VARIABLES:** imitation of M by S
- MATERIALS:** three hats, three feathers, three pencils, dittoed mazes with three bowls.
- PROCEDURE:** S played the maze game and was given tokens for correct responses which were put in one of the bowls. S observed Rewarding or Non-rewarding Peer M. S then played game that M had.
- RESULTS:** Observation of the M produced significantly more altruism than occurred when no opportunity to observe a M was provided. Observing the M also affected the frequency of "incidental" behaviors. During the first trials, Ss who had received frequent reinforcement from their peers imitated a rewarding peer M more frequently than a nonrewarding M. Ss who were observed to receive infrequent peer reinforcement imitated a nonrewarding M more frequently than a rewarding M. Results were significant for those Ss who observed and imitated a M's verbalizations. No main effects were significant for the "line-up" scores. Frequency of altruism was highly correlated with the latency of nonaltruistic behavior, suggesting that the two parameters of altruism were imitated.



220 AFFECTIVE Altruism

Poulos, R. W., & Liebert, R. M.

"Influence of modeling, exhortative verbalization, and surveillance on children's sharing"

DEVELOPMENTAL PSYCHOLOGY, 1972, 6 (3), 402-408

**PURPOSE:** To examine the influence of modeling, verbalization, and surveillance on children's sharing behavior, including their combined effects.

**SUBJECT CHARACTERISTICS:** 95 second and third grade girls from middle-class public school; 80 served as Ss in Experiment I and the remaining 15 as Ss for Experiment II.

**MODEL CHARACTERISTICS:** adult female E

**INDEPENDENT VARIABLES:** M or No M; Verbalization or No Verbalization; Surveillance or No Surveillance

**DEPENDENT VARIABLES:** S's attention to various cues given by modeling, verbalization, and surveillance as to appropriateness and desirability of sharing behavior.

**MATERIALS:** mobile laboratory, token, token can, unequal slide pairs

**PROCEDURE:** In the first experiment S played a slide guessing game, earning eight tokens. Tokens could be exchanged for prizes, but could be given to other children who couldn't earn tokens. S observed E give away half her tokens, heard E say that it would be good to give away half the tokens, or E stood by while S had the chance to donate. In the second experiment the procedures were the same except that a second E administered a questionnaire about the experiment before S had a chance to share her own tokens.

**RESULTS** In Experiment I, it was demonstrated that modeling and verbalization each increased



## 220 AFFECTIVE Altruism (Cont.)

## RESULTS:

the number of shared tokens and the percentage of children who shared. These variables did not, however, influence the adoption of the modeled and/or exhorted standard, 4 tokens, nor was their combination more powerful than either variable alone. Further, whereas verbalization was considerably less effective in the absence of surveillance than in its presence, modeling was not so influenced. Results from Experiment II, designed to probe the S's reactions to experimental manipulations, established that children recalled the specific standard, correctly understood the sharing instructions as permissive, and were familiar with a norm of giving.

221 AFFECTIVE Altruism

Presbie, R. J., & Coiteux, P. F.

"Learning to be generous or stingy: Imitation of sharing behavior as a function of model generosity and vicarious reinforcement"

CHILD DEVELOPMENT, 1971, 42, 1033-1038

- PURPOSE:** To study the effects of M generosity and vicarious reinforcement on the imitation of sharing behavior.
- SUBJECT CHARACTERISTICS:** 64 first grade children
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Sex; Generous or Stingy M; Self-Praise or No Self-Praise; Praise or No-Praise of M by E
- DEPENDENT VARIABLES:** measure of generosity or stinginess in sharing marbles
- MATERIALS:** child-sized table, marbles, several containers for marbles, photos of children designated as sharees, sharer and sharee receptacle and storage containers for M and sharee
- PROCEDURE:** M given five sets of 12 marbles each. Generous M gave away 9, stingy M gave away 3. M received praise from E and/or himself. M left. S given seven sharing trials.
- RESULTS:** No significant sex effects. Generosity by praise produced no significant effects, nor did type of praise effect amount shared. Generosity by trial showed an increase in sharing over trials in generous condition while Ss with stingy M were the same except for the last trial when they gave away more. With self-praise, presence or absence of E's praise had no effect. But without self-praise, E's praise increased sharing with generous M and decreased sharing with stingy M. When E praised M, Ss shared less when generous M self-praised, but had no effect

221 AFFECTIVE Altruism (Cont.)

RESULTS:

on stingy M who self-praised. Generous M's self-praise increased sharing and stingy M's self-praise decreased sharing when E gave no praise. M praise and E praise interact with generosity and each other.

## 281 AFFECTIVE Altruism

Rosenhan, D., &amp; White, G. M.

"Observation and rehearsal as determinants of prosocial behavior"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 5 (4), 424-431

- PURPOSE:** To test the hypothesis that exposure to a giving M would elicit substantially more altruistic behavior than would occur under circumstances with no M.
- SUBJECT CHARACTERISTICS:** 65 boys and 65 girls from fourth and fifth grades of a middle class public school
- MODEL CHARACTERISTICS:** male adult model and adult female experimenter
- INDEPENDENT VARIABLES:** Negative-Reinforcing M; Positive-Reinforcing M; No Interaction with M; No M Control
- DEPENDENT VARIABLES:** S's "altruistic" response by imitatively giving gift certificates to charity cause, in presence and in absence of model
- MATERIALS:** miniature bowling game, gift-certificate tokens, charity box
- PROCEDURE:** Before playing the game, Ss were exposed to a M that made either positive or negative responses to S, an altruistic M who did not talk with S, or Ss were not exposed to M at this time. Ss told that they would receive gift certificates for each high score in the bowling game. M and S alternated for first game with M giving away half of his certificates. S played second game alone.
- RESULTS:** No control Ss, who did not observe M contributed to the charity while playing alone. Among Ss who observed M, it was primarily those Ss who contributed in the M's presence who also contributed in his absence, suggesting that rehearsal as well as observation were necessary for the elicitation of this phenomenon. The valence (positive or negative) and occurrence of a prior relationship with the M had peculiar and perhaps indeterminant effects on the elicitation of altruistic behavior.

## 251 AFFECTIVE Altruism

Staub, E.

"A child in distress: The influence of nurturance and modeling on children's attempts to help

DEVELOPMENTAL PSYCHOLOGY, 1971, 5 (1), 124-132

- PURPOSE:** To test the effect of nurturance and modeling on children's helping behavior and relation of family size and teacher's ratings.
- SUBJECT CHARACTERISTICS:** 32 boys and 32 girls from a kindergarten in Watertown, Mass. Ss all white, mostly lower middle class with some middle class Ss.
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** Nurturance; No Nurturance; Family Size; Teacher's Ratings of Ss; M; Sex
- DEPENDENT VARIABLES:** measure of S's helping behavior either actively helping or volunteering information about child in distress
- MATERIALS:** miniature bowling game, blocks, paper and crayons, tape in another room of a child crying
- PROCEDURE:** E and S played bowling game together with E being either warm and friendly or neutral and task-oriented. E then either responded to tape in another room of child crying and returned to say she had made child happy (Modeling) or went to room to check on child and returned to tell S that child was playing. E left room, telling S that he could play, and that there were crayons in the other room if she needed more. S then heard tape of crash, then child crying. S observed for active help, going to other room, or volunteering information when E returned, or no help, neither attempting to help nor telling E.
- RESULTS:** No significant sex differences. Negligible differences between nurturance and modeling. Highest helping behavior by Ss with nurturance

## 251 AFFECTIVE Altruism (Cont.)

## RESULTS:

and modeling. Children from smaller families helped more than children from larger families. Teacher's ratings of child's imitation of activity, need for approval, expression of affection and competence were all positively correlated to helping behavior for boys, but negatively correlated for girls.

## 101 Affective Self-Reward

Allen, M. K., &amp; Liebert, R. M.

"Children's adoption of self-reward patterns: Model's prior experience and incentive for nonimitation"

CHILD DEVELOPMENT, 1969, 40, 921-926

- PURPOSE:** To study effect of incentive and M's alledged prior experience on children's adoption of a modeled self-reward standard while playing a bowling game.
- SUBJECT CHARACTERISTICS:** 7-8 year old girls
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** High or Low Incentive; M's Experience (High or Low)
- DEPENDENT VARIABLES:** measure of Self-Reward
- MATERIALS:** bowling game with pre-set scores of 5, 10, 15, and 20
- PROCEDURE:** Scores manipulated at fixed intervals, each score appearing one fourth of the time. M administered a self-reward token for each score of 20. High Incentive Ss told that their token could be exchanged for a small gift. Low Incentive Ss told nothing. M introduced as having prior or no experience with game.
- RESULTS:** Observation of an experienced M resulted in less self-reward only for highest sub-standard score. Effects of M's experience and incentive tended to be inversely additive for self-reward. Presence of incentive significantly reduced S's adoption of standard.

## 102 AFFECTIVE Self-Reward

Allen, M. K., &amp; Leibert, R. M.

"Effects of live and symbolic deviant modeling cues on adoption of a previously learned standard"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1969, 11 (3), 253-260

- PURPOSE:** To examine the efficacy of deviant live and deviant symbolic modeling cues on the adoption of a previously learned standard and to examine the additive effect of combining deviant live modeling cues and deviant symbolic modeling cues on the adoption of the standard.
- SUBJECT CHARACTERISTICS:** fourth grade boys and girls
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Sex; Deviant-Symbolic M; Deviant Live M; Deviant Live and Symbolic M
- DEPENDENT VARIABLES:** measure of Self-Reward
- MATERIALS:** bowling game with pre-set scores of 5, 10, 15, or 20, token dispenser
- PROCEDURE:** Ss instructed by E to take token only for scores of 20, tokens to be exchanged for prizes. Deviant-Symbolic M told S that he had just played, and had given himself tokens for scores of 15 and 20. Deviant-Live M, S watched M play and give self tokens for scores of 15 and 20. Ss played the game alone, receiving pre-set scores.
- RESULTS:** No significant sex differences. Both treatments had effects on self-reward for scores of 15, but Deviant-Live M weakened adoption of standard more than Deviant-Symbolic M. For scores of 20, there was more self-reward with the live M.



## 109 AFFECTIVE Self-Reward

Bandura, A., Grusec, J. E., &amp; Menlove, F. L. .

"Some social determinants of self-monitoring reinforcement systems"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 5 (4), 449-455

- PURPOSE:** Test social conditions under which S will imitate high standards of self-reward even though this will generate negative self-evaluation.
- SUBJECT CHARACTERISTICS:** 64 boys and 64 girls from 7-11 years from four elementary schools participating in Palo Alto summer recreation program
- MODEL CHARACTERISTICS:** male and female adult, four children from 8-10 years
- INDEPENDENT VARIABLES:** Sex; Adult M; Adult and Peer M; High Nurture; Low Nurture; Vicarious Reinforcement
- DEPENDENT VARIABLES:** measure of self-reward through number of tokens taken
- MATERIALS:** bowling game, eight lights on shield from 10 to 80 indicating score, tokens to be exchanged for prizes
- PROCEDURE:** Nurturant Treatment, M introduced as S, during waiting period M either played with S or read newspaper while S played with toys. Modeling Treatment, peer and adult Ms alternated for 20 games. Adult M received pre-set scores from 50-80 points, rewarded self for games of 60 and above. Peer M received scores from 10-40 points, rewarded self for scores of 20 and above. Social Reinforcement, peer M left, adult M either praised for high standards or merely thanked for his assistance. S Measurement, E left, S played 36 trials with pre-set scores from 10-60.

## 109 AFFECTIVE Self-Reward (Cont.)

## RESULTS:

Children with adult M, Social Reinforcement set higher standards than No Social Reinforcement. Model Nurturance a weaker condition. S with High Nurturance were more accepting of peer M's low standards and more conducive to self-reward. Least self-reinforcing pattern was Non Nurturant Adult M only with Social Reinforcement. Ss exposed to conflicting standards (Peer and Adult M) more inclined to self-reward for scores below 60. Social Reinforcement of Adult M decreased and Peer M increased self-reinforcement responses. Peer M did not increase self-reward for scores below Peer M's criterion. Nurturance increased self-reward for girls with Peer M and decreased self-reward with Adult M only while the opposite held for boys.

## 113 AFFECTIVE Self-Reward

Bandura, A., &amp; Kupers, C. J.

"Transmission of patterns of self-reinforcement through modeling"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1964, 69 (1), 1-9

- PURPOSE:** To test the hypothesis that patterns of self-reinforcement are acquired imitatively and that self-evaluation is dependent upon degree to which S matches the behavior of the Ms he has chosen for comparison and self-reinforcement schedules Ms have adopted for their own achievement.
- SUBJECT CHARACTERISTICS:** 80 boys and 80 girls from 7-9 years participating in the L. A. Board of Education summer recreation program. Ss came from six public schools.
- MODEL CHARACTERISTICS:** adult male and female, nine year old boy and girl
- INDEPENDENT VARIABLES:** Sex of S; Sex of M; High-Criterion for Self-Reinforcement, Low-Criterion for Self Reinforcement; Adult M; Peer M
- DEPENDENT VARIABLES:** measure of self-rewards of candy and self-evaluative verbalizations when S performed alone.
- MATERIALS:** bowling game with pre-set scores of 5, 10, and 5, bowl of M&Ms and small containers for candy
- PROCEDURE:** Ms introduces as Ss. M performed ten trials of three balls each, obtaining scores from 5-30. High Criterion for Self-Reinforcement, M rewarded self with candy and positive self-evaluative verbalizations when he obtained scores of 20 and above, or denied self candy and made critical self-evaluations when he obtained scores less than 20. Low Criterion for Self-Reinforcement, pattern above, criterion set at 10. M left. S performed 15 trials of three balls each, receiving pre-set

## 113 AFFECTIVE Self-Reward (Cont.)

## PROCEDURE:

scores similar to M's. About half the scores were 10-15, one third were 20 or higher.

## RESULTS:

Control and Low Criterion M Ss had greater frequency of self-reinforcement at low or intermediate levels. Ss matched self-reinforcement of Adult M more than Peer Ms. With Low Criterion M, more Ss with Peer M rewarded selves for low-level performances than those with Adult M. At the lowest levels of performance, Ss exposed to M rarely gave self-reinforcement while at highest performance levels Ss exposed to High Criterion M rewarded themselves at a much higher frequency than Control or Low Criterion Ss. Sex, Age, M Status and M Criterion Level did not make a significant difference for imitation of verbal self-reinforcement.

## 116 AFFECTIVE Self-Reward

Bandura, A., Mischel, W.

"Modification of self-imposed delay of reward through exposure to live and symbolic models"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1965, 2 (5), 698-705

- PURPOSE:** Effect of modeling procedures on the delay of reward behavior of the subjects.
- SUBJECT CHARACTERISTICS:** 60 boys and 60 girls, fourth and fifth grades
- MODEL CHARACTERISTICS:** same sex M, male and female college graduates
- INDEPENDENT VARIABLES:** S Preference for Delayed, but Increased Reward or for Immediate, but Low Reward; Sex; Live M; Written M
- DEPENDENT VARIABLES:** number of delayed responses produced by low-delay group and number of immediate responses produced by high-delay group
- MATERIALS:** booklets with descriptions of paired reinforcers such as small amounts of money and peanuts
- PROCEDURE:** Ss assessed for reinforcement pattern, Immediate Low Reward or Delayed Increased Reward. Treatment, Ss presented with Live or written M with reinforcement pattern opposite to S choosing Delayed Reward Reward for Immediate Reward Ss or Immediate Reward for Delayed Reward Ss. Ss then given paired items to choose. Generalization given four to five weeks later.
- RESULTS:** Ss who had a Delayed Reward pattern increased their preference for Immediate Reward after observing Immediate Reward M. The opposite was true with Ss who initially had an Immediate Reward pattern. The Live M groups had larger changes in preference than the Written M groups in the Generalization Phase. There were no significant differences between the preference changes in the Live and Written M groups in the Immediate experiment.

121 Bandura, A., & Whalen, C. K.

"The influence of antecedent reinforcement and divergent modeling cues on patterns of self-reward"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1966, 3 (4), 373-382

- PURPOSE:** To ascertain the effects of prior reinforcement history and a M's standards for self-reinforcement on the children's self-reinforcement response.
- SUBJECT CHARACTERISTICS:** 80 boys and 80 girls, 8-11 years
- MODEL CHARACTERISTICS:** adult male and female
- INDEPENDENT VARIABLES:** Prior Experience (Success or Failure); Level of Self-Reinforcement of M (High, Median and Low)
- DEPENDENT VARIABLES:** self-reward responses
- MATERIALS:** bowling machine with 7 numbers varying between 5 and 20 in value
- PROCEDURE:** Ss were exposed to three pre-experimental tasks involving physical strength, problem solving ability, and psychomotor dexterity on which the E could control the scores. After E stated the expected scores, half of the Ss were led to believe they surpassed the criterion (success group) and half had scores below the expected level (failure group). Ss were exposed to high self-reinforcement standard M, intermediate level M, to a low level M, and to a no M control group. Ms set scores on the machines (which were controlled by E) and reinforced themselves with candy when they surpassed the designated criteria level. Ss were then taken to a new room where new Es waited and played the games. Their scores on that game reflected their level of self-reinforcement.
- RESULTS:** Ss who were exposed to a low criterion M reinforced themselves more generously than Ss exposed to a high standard M. Ss exposed to failure (in control group) adopted a more generous standard of self-reward than those who were successful.

122 Bee, H. L., & Colle, H. A.

"Effectiveness of direct reward and modeling in establishment of standards of excellence"

PSYCHOLOGICAL REPORTS, 1968, 23, 1351-1358

**PURPOSE:** To assess imitation level of Ss in experimental conditions with modeling and direct reward variables.

**SUBJECT CHARACTERISTICS:** 84 boys, 7-11 years

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** M; Direct-Reward; Level of Standard

**MATERIALS:** bowling game with pre-set scores, candy as reward

**PROCEDURE:** S observed M play game and reward self with candy and verbal self-praise for scores of 10 or 20 and above. S played the game. For Direct-Reward, S played the game and was rewarded for scores above standard. S then played the game without reward or praise from E.

**RESULTS:** No main effect of M versus Direct-Reward. Experimental groups showed more standard setting than Control groups.

## 153 AFFECTIVE Self-Reward ., . . . .

Gumpert, P., Horstein, H. A., Lasky, E., & Lewicki, R.

"Modelling as a factor in the internalization of social standards"

PERCEPTUAL AND MOTOR SKILLS, 1968, 27, 555-563

## PURPOSE:

To observe the effects of giving Ss the opportunity to observe, presumably internalize, and abide by the self-reinforcement standards set by an adult authority and the effect of causing these standards to be violated by a person who had little authority and whose behavior had obvious consequences for the S.

## SUBJECT CHARACTERISTICS:

third and fourth grade children, 29 boys and 25 girls

## MODEL CHARACTERISTICS:

adult female

## INDEPENDENT VARIABLES:

Over-Punished; Under-Punished; Over-Rewarded; Under-Rewarded; Birth Order; Sex of S

## DEPENDENT VARIABLES:

number of token taken (reward), number of pennies given back (punishment)

## PROCEDURES:

Ss told that knocking down a green pin was good while a red one was bad. M played the game, taking a penny for each red pin and giving the machine a penny for each red pin. S played alone. More or less strict rules were then imposed. S played alone again.

## RESULTS:

Under-punishment and over-reward tended to result in decreased rule adherence. The other conditions showed no change. First born tended to be more easily influenced than later born. No significant sex differences.



## 167 AFFECTIVE Self-Reward

Hill, J. H., &amp; Liebert, R. M.

"Effects of consistent or deviant modeling cues on the adoption of a self-imposed standard"

PSYCHONOMIC SCIENCE, 1968, 13 (4), 243-244

- PURPOSE:** To explore the hypothesis that direct instruction should be strengthened by consistent modeling and weakened by deviant modeling.
- SUBJECT CHARACTERISTICS:** 21 boys and 21 girls (9-10 years of age)
- MODEL CHARACTERISTICS:** 1-3 Ms, assume adult
- INDEPENDENT VARIABLES:** One-Three Ms; Consistent or Deviant M; No M; Sex
- DEPENDENT VARIABLES:** measure of self-reward in conformity to a standard
- MATERIALS:** miniature bowling game with pre-set scores, tokens
- PROCEDURE:** Ss instructed to take tokens for scores of 20. Ss then observed either 0, 1, 2, or 3 Ms perform the game. The number of trials modeled were constant throughout groups. Ms in the deviant condition took tokens for scores of 15 and 20. Consistent Ms took tokens only for scores of 20. The M left the room and the S played the bowling game receiving predetermined scores.
- RESULTS:** No significant sex differences. No significant difference between the groups in the number of tokens taken for scores of 20. The only significant finding for scores of 15 were that Ss in the deviant group rewarded themselves more for scores of 15 than Ss in the consistent group.

## 177 AFFECTIVE Self-Reward

Liebert, R. M., &amp; Allen, M. K.

"Effects of rule structure and reward magnitude on the acquisition and adoption of self-reward criteria"

PSYCHOLOGICAL REPORTS, 1967, 21, 445-452

- PURPOSE:** To investigate acquisition and adoption of a self-reward criteria through the manipulation of social learning variables such as reward magnitude, rule structure and training condition.
- SUBJECT CHARACTERISTICS:** 32 boys and 32 girls from the third and fourth grade
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** High Rule Structure (Verbalization) or Low Rule Structure (No Verbalization); High or Low Reward; Direct or Observational Training; Sex
- DEPENDENT VARIABLES:** scores for which S took tokens (self-reward), verbalizations of S, and S responses when questioned about the rule
- MATERIALS:** bowling game with pre-set scores, tokens
- PROCEDURE:** Ss were either trained directly, receiving tokens for scores of 20, or observed M who took rewards for scores of 20. Ss were told either that tokens could be exchanged for valuable prizes or that the tokens had no external value. Ss then played the game alone, afterwards asked to verbalize the rule.
- RESULTS:** Ss with Verbalization of the rule deviated significantly less. There was no significant difference between the High or Low Reward groups, nor were there any significant differences between Direct or Observational Training. Ss with High Rule Structure made more self-rewarding verbalizations. As for stating the rule, there were no significant differences except between Direct and Observational Training with Ss being directly trained stating the rule more.

## 183 AFFECTIVE Self-Reward

Liebert, R. M., Hanratty, M., &amp; Hill, J. E.

"Effects of rule structure and training method on the adoption of a self-imposed standard"

CHILD DEVELOPMENT, 1969, 40, 93-101

- PURPOSE:** To study effects of rule structure and training method on children's adoption of self-imposed standard.
- SUBJECT CHARACTERISTICS:** 24 boys and 24 girls, second graders, with mean CA of 7.5, from lower middle class Nashville school
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Direct Instruction; M; Level of Rule Structure--High with statements of social approval and deservingness, Moderate with social approval, and Low with explicit statement of rule without justificatory statements; Sex
- DEPENDENT VARIABLES:** number of tokens self-administered with scores below 20 (degree S deviated from standard), and number of tokens taken with scores of 20 (degree of transmission of legitimacy of self-reward) when S performed alone.
- MATERIALS:** bowling game with pre-set scores, token dispenser, attractive prizes
- PROCEDURE:** M, described as training agent (TA), explained game. S received direct instruction or modeling for experimental treatment. Difference in rule structures were degree of sentence statements, High-- "20, that's a good score, that deserves a chip.", moderate-- "20, that's a good score, take a chip.", and low-- "20, take a chip." TA told S or modeled that tokens were for scores of 20 and left. E came in and told S that tokens were for prizes and S could take as many tokens as he wanted.

## 185 AFFECTIVE Self-Reward (Cont.)

## RESULTS:

Method of training (direct instruction vs. modeling) and sex had no significant influence on self-reward for scores of less than 20. No significant difference for self-reward of scores of 20. High Rule Structure had fewer deviations from standard than Moderate which was superior to Low Rule Structure.

## 185 AFFECTIVE Self-Reward

Liebert, R. M., &amp; Ora, J. P., Jr.

"Children's adoption of self-reward patterns: Incentive level and method of transmission"

CHILD DEVELOPMENT, 1968, 39, 537-544

- PURPOSE:** To assess the effect of high vs. low incentive and modeling vs. direct training on level of standard setting.
- SUBJECT CHARACTERISTICS:** 36 boys, 36 girls, 8-10 years old
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** High or Low Incentive Levels; Sex; M; Direct Training; Control
- DEPENDENT VARIABLES:** number of times S adhered to standard set during modeling or training phase of experiment.
- MATERIALS:** bowling ball game with scores controlled by experimenter, number of small toys which could be exchanged for tokens
- PROCEDURE:** S introduced to bowling game and assigned randomly to one of the three treatment groups. During training phase, if S assigned to M group, she watched the M go through the game, setting standards for himself, and awarding tokens. If she was assigned to the Direct Training, she was "led" through the practice session and told when to take a token. Ss in the High Incentive group were shown the toys which could be "bought" by tokens. Ss in low incentive group were shown nothing.
- RESULTS:** Ss adhered to the previously established self-reward standard during their trials they played alone. Stringent self-reward rule adhered to by Ss of both sexes who had been directly trained as well as those who had been trained by observing a M. Ss in the high incentive treatment showed more tendencies to deviate from established standards than those in low incentive treatment.

## 204 AFFECTIVE Self-Reward

McMains, M. J., &amp; Liebert, R. M.

"Influence of discrepancies between successively modeled self-reward criteria on the adoption of a self-imposed standard"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1968, 8 (2), 166-171

**PURPOSE:** To investigate the effects of discrepancies between self-reward criteria exhibited by two successively presented Ms and the criteria actually imposed by one of them upon children's adoption of a standard.

**SUBJECT CHARACTERISTICS:** 24 boys and 24 girls from fourth grade public elementary school in Nashville

**MODEL CHARACTERISTICS:** two adult males

**INDEPENDENT VARIABLES:** Consistent or Discrepant Training; Consistent or Discrepant Self-Reward by second M; Sex

**DEPENDENT VARIABLES:** measure of adoption of stringent self-reward criterion for scores in bowling game, number of tokens taken when S played alone

**MATERIALS:** miniature bowling game with pre-set scores of 5, 10, 15, and 20, mobile laboratory, tokens to be exchanged for prizes

**PROCEDURE:** S and first M alternated trials, with M imposing stringent self-reward criterion on S (tokens taken only for scores of 20). M was either consistent or discrepant in meeting criterion for his self-reward. S played alone. Second M came in and played alone while S observed. M was either consistent or discrepant in meeting stringent criterion for self-reward.

**RESULTS:** For first trial, Ss exposed to self-stringent M were more stringent in self-reward than Ss exposed to discrepant M. For second test, Ss who observed two discrepant Ms were more self-lenient than those who observed

204. AFFECTIVE Self-Reward (Cont.)

RESULTS:

Ms. abiding by stringent standards. Ss who observed consistent and discrepant M were intermediately self-lenient with Ss observing consistent then discrepant Ms more self-lenient than Ss observing discrepant then consistent Ms.

## 205 AFFECTIVE Self-Reward

McMains, M. J., Liebert, R. M., Hill, J. H., Spiegler, M. D., & Baker, E. L.  
"Children's adoption of self-reward patterns: Verbalization and modeling"

PERCEPTUAL AND MOTOR SKILLS, 1969, 28, 515-518

- PURPOSE: To examine the relative influences of verbalization and modeling upon children's adoption of a self-reward standard when performing alone.
- SUBJECT CHARACTERISTICS: 48 boys and girls from summer camp, in third and fourth grades, randomly assigned to treatment conditions without regard to sex.
- MODEL CHARACTERISTICS: E was adult male, who also served as M for those conditions; scores were taken by hidden observer
- INDEPENDENT VARIABLES: M; No M; Verbalization; No Verbalization
- DEPENDENT VARIABLES: S's correct self-reward performance, adhering to self-imposed standard when performing alone
- MATERIALS: bowling game with pre-set scores, token dispenser
- PROCEDURE: E explained operation of bowling alley to S, also showing S token dispenser, indicating that S should take tokens for "good scores", and the more tokens he had at the end, the better prize he'd win (E then showed S high-incentive prizes). S was then left alone to play the game. The hidden observer recorded the scores for which each S self-administered tokens. E then returned, counted tokens, gave S his prize. Half of Ss observed E play the game and reward himself when he obtained scores of 15 or 20 (modeling); the other half did not. When they were introduced to the game, half of the Ss in the above groups were told by E that they should take tokens for scores of 15 and 20 (verbalization) while the other half were



205 AFFECTIVE Self-Reward (Cont.)

PROCEDURE:

told they should take tokens for good scores (no verbalization). No indication was made to these latter Ss as to what constituted "good scores".

RESULTS:

The two treatments were found to be equally influential and additive in their effects. Further, Ss exposed to both verbalization and modeling exhibited almost perfect adherence to the standard despite a powerful incentive to deviate.

## 208 AFFECTIVE Self-Reward

Mischel, W., &amp; Liebert, R. M.

"Effects of discrepancies between observed and imposed reward criteria on their acquisition and transmission"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1966, 3 (1), 45-53

- PURPOSE:** To assess effects of leniency on the S, and the effects or the role played by the S on his performance.
- SUBJECT CHARACTERISTICS:** 54 fourth grade children
- MODEL CHARACTERISTICS:** 2 adult females
- INDEPENDENT VARIABLES:** Stringent M and S Standards; Lenient M Standards with Stringent S Standards; Stringent M Standards with Lenient S Standards; S as Observer or M
- DEPENDENT VARIABLES:** level of self-reward standard set by S during independent play with game
- MATERIALS:** modified bowling game with scores electronically manipulated by E
- PROCEDURE:** S taken into experimental trailer by E and introduced to M. The stringent criterion M who imposed a lenient criterion on the S rewarded herself for scores of 20, but allowed the S to reward himself for scores of 20 and 15. The lenient criterion M who imposed a stringent criterion on the S awarded herself a token for a lower score, but only allowed the S to award himself for a score of 20. In the stringent M who imposed a stringent criterion on the S condition, the M imposed the same standard (20) on herself that she imposed on the S. Following the modeling session, the Ss were assigned to one of 2 role treatments. In the first, performer-demonstrator, the S then was asked to play with the game alone. After this, the E brought another, younger child into the room and asked S to demonstrate the game. In the second condition this situation was reversed.

## 208 AFFECTIVE Self-Reward (Cont.)

## RESULTS:

The role played by the S did not have any significant effect upon the reward standard adopted by S. The Ss tended to impose the modeled standards when acting as M himself rather than imposing the standards imposed on him. During the trials that Ss played by themselves they tended to adopt the modeled standards rather than the imposed standards.

## 209 AFFECTIVE Self-Reward

Mischel, W., &amp; Liebert, R. M.

"The role of power in the adoption of self-reward patterns"

CHILD DEVELOPMENT, 1967, 38, 673-683

- PURPOSE:** To investigate the manner in which the M's power affects the S's self-reward behavior when the M imposes more stringent self-reward contingencies on the S than on himself.
- SUBJECT CHARACTERISTICS:** 28 boys and 28 girls from the second and third grades in the Stanford area
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Power M; Reinforcement; Control; Sex
- DEPENDENT VARIABLE:** occurrences and nonoccurrences of self-reward where the S performed alone
- MATERIALS:** bowling game with pre-set scores
- PROCEDURE:** S and M played bowling game with M giving himself reward for low performances, but insisting on a high standard for the S. Some of the Ss were then told that the M would give valuable toys to some of the participants and that the S had a good chance of getting a toy (Power M). S played alone, then told that they would not receive a toy, and played the game again.
- RESULTS:** No significant sex differences. Ss in the power M condition were more stringent with their self-rewarding than the controls. The self-reward behavior in the power M group did not increase after the power to the M had been negated.

106 AFFECTIVE Aggression

Bandura, A.

"Influence of model's reinforcement contingencies on the acquisition of imitative responses"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1965, 1 (6), 589-595

- PURPOSE:** To measure the difference between performance (directly observable responses as indicated without incentives) and acquisition (what S has learned as indicated by behavior induced by positive incentives).
- SUBJECT CHARACTERISTICS:** 33 boys and 33 girls from 42-71 months enrolled at the Stanford University Nursery School
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** M Punished; M Rewarded; No Consequence; Sex
- DEPENDENT VARIABLES:** performance and acquisition measures of imitative responses of aggressive behavior toward Bobo doll.
- MATERIALS:** film of M being rewarded, punished or receiving no consequences for verbally and physically aggressing adult-sized Bobo doll, playroom with same materials as in film, juice-dispensing fountain, sticker pictures and pastoral pictures to attach sticker pictures to
- PROCEDURE:** Exposure Procedure, children observed film with M aggressing Bobo doll and being either rewarded, punished or receiving no consequences. Performance Measure, S<sub>s</sub> taken to playroom, encouraged to play. Acquisition Index, E entered room with fruit dispenser and sticker pictures, gave juice treat. S<sub>s</sub> told they would receive additional treats for each matching response to M's behavior.

## 106 AFFECTIVE Aggression (Cont.)

## RESULTS:

On Performance scores, M Rewarded and No-Consequence groups did not differ, but performed significantly more matching responses than the M Punished group. Equivalent imitative learning was shown on the Acquisition scores for all groups. A sex effect was shown on both scores, but was larger on the Performance measure with boys having more imitative responses than girls.

# 112 AFFECTIVE Aggression

Bandura, A., & Huston, A. C.

"Identification as a process of incidental learning"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1969, 63 (2), 311-318

- PURPOSE:** To determine if Ss imitate not only discrimination responses, but other behaviors performed by M.
- SUBJECT CHARACTERISTICS:** 24 boys and 24 girls, 45-61 months, matched for sex and dependency
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** Nurturant M; Nonnurturant M; Control; Sex.
- DEPENDENT VARIABLES:** Extent to which the S imitated M's behavior (aggression, discrimination task).
- MATERIALS:** Two small identical boxes placed five feet apart with pictures inside the proper box serving as rewards.
- PROCEDURE:** Phase I, Ss played with nurturant M or non-nurturant M. Phase II, Ss performed a diverting two-choice discrimination problem involving box-choosing. During task, M performed irrelevant behaviors while serving as M for discrimination problem.
- RESULTS:** Ss in the Nurturant group imitated more than Ss in the Nonnurturant group except in the area of aggression where all Ss readily imitated. Ss in Nurturant group exhibited significantly more predecision conflict behavior than Ss in the Nonnurturant group. Nurturance did not have any significant effect on the S's imitation on discrimination response.

# 118 AFFECTIVE Aggression

Bandura, A., Ross, D., & Ross, S.

"Imitation of film-mediated aggressive models"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1963, 66 (1), 3-11

- PURPOSE:** To test the hypothesis that exposure of children to film-mediated aggressive Ms would increase the probability of S's aggression to subsequent frustration.
- SUBJECT CHARACTERISTICS:** 48 boys and 48 girls with a mean age of 52 months, enrolled at nursery school
- MODEL CHARACTERISTICS:** one male and one female adult
- INDEPENDENT VARIABLES:** Sex of S; Sex of M; Live-Aggressive M; Filmed-Aggressive M; Filmed-Aggressive Cartoon M
- DEPENDENT VARIABLES:** imitation of M's aggressive motor and verbal responses
- MATERIALS:** picture-making materials, toys, mallet, Bobo doll, films of human and cartoon-character Ms, attractive toys, aggressive and nonaggressive toys
- PROCEDURE:** Ss pretested on aggressive behavior. S observed either Live M, Filmed Human M or Cartoon M being verbally and physically aggressive to Bobo doll. S taken to room with attractive toys, began to play, then told she could not play with toys. S then taken to another room with aggressive and nonaggressive toys.
- RESULTS:** Ss with Ms exhibited nearly twice as much aggression as did Ss in Control Group. Filmed aggression not only facilitated the expression of aggression, but also effectively shaped the form of S's aggressive behavior. The effects of exposure to aggression are to some extent a function of the sex of M, sex of S and the reality cues of M.



## 119 AFFECTIVE Aggression

Bandura, A., Ross, D., &amp; Ross, S.

"Transmission of aggression through imitation of aggressive models"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1961, 63,(3), 575-582

**PURPOSE:** To test imitative learning which involved the generalization of imitative response patterns to new setting without M, and to test hypotheses that observation of subdued nonaggressive Ms would have a generalized inhibiting effect on subsequent behavior and that there would be differential results concerning the influence of M's sex and S's sex on imitation.

**SUBJECT CHARACTERISTICS:** 36 boys and 36 girls enrolled in nursery school, mean age 52 months

**MODEL CHARACTERISTICS:** adult male and female

**INDEPENDENT VARIABLES:** Sex of M; Sex of S; Aggressive M; Non-aggressive M

**DEPENDENT VARIABLES:** imitation of M's aggressive or nonaggressive motor and verbal responses

**MATERIALS:** picture-making materials, mallet, Bobo doll, attractive toys, aggressive and nonaggressive toys

**PROCEDURE:** Ss prerated on aggressiveness. S observed M either play with tinker toys or physically and verbally aggressing Bobo doll. S taken to room with attractive toys, but soon after S involved with toys, S told not to play with them. S then taken to room with aggressive and nonaggressive toys.

**RESULTS:** Ss with Aggressive M reproduced M's behavior and were much more aggressive than Control or Nonaggressive M Ss. Boys were more aggressive than girls with Male M. Ss exposed to Nonaggressive M were less aggressive than Controls, especially those exposed to Nonaggressive Male M.

## 120 AFFECTIVE Aggression

Bandura, A., Ross, D., & Ross, S. A.

"Vicarious reinforcement and imitative learning"

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, 1963, 67 (6), 601-607

- PURPOSE:** To study the influence of response consequences to the M on the imitative learning of aggression.
- SUBJECT CHARACTERISTICS:** 40 boys and 40 girls enrolled in nursery school with a mean age of 51 months.
- MODEL CHARACTERISTICS:** two peer males, Rocky (Aggressive) and Johnny (Nonaggressive)
- INDEPENDENT VARIABLES:** Aggressive M Rewarded; Aggressive M Punished; Nonaggressive M; No M; Sex
- DEPENDENT VARIABLES:** matching aggressive and nonaggressive responses, nonimitative aggressive responses, M choice
- MATERIALS:** three five-minute film sequences on television console, room with toys
- PROCEDURE:** Ss were shown film of Rocky being aggressive toward Johnny, getting his toys and treats, or film of Rocky being beaten by Johnny after Rocky was aggressive, or film of the two Ms playing vigorously together. Ss taken to room with same toys in film.
- RESULTS:** Ss chose M on basis of reward (success) given to M rather than intrinsic desirability of aggression. Fear of punishment is usually an irrelevant rather than an instigating factor in the identification process. Control over aggression was vicariously transmitted to boys by the punishment of M, and to girls by presentation of incompatible prosocial examples of behavior.

## 132 AFFECTIVE Aggression

Christy, P. R., Gelfand, D. M., &amp; Hartmann, D. P.

"Effects of competition-induced frustration on two classes of modeled behavior"

DEVELOPMENTAL PSYCHOLOGY, 1971, 5 (1), 104-111

**PURPOSE:** To assess effect of observation of aggressive behavior on the performance of Ss who had won or lost in competitive games.

**SUBJECT CHARACTERISTICS:** first and second grade boys, Anglo, middle class

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** M; No M; High Aggression; High Activity; Age; Success; Failure; Competition

**DEPENDENT VARIABLES:** imitative and nonimitative aggression and high activity

**MATERIALS:** experimental room with table, Bobo doll and clay, and free play room with various toys including Bobo doll, and inner tubes

**PROCEDURE:** For Aggressive M, M put on his "mean hat" and engaged in aggressive activity toward Bobo doll. For Nonaggressive M, M put on his "jumping hat" and jumped around and dove into a pile of inner tubes. Ss were sitting at table playing with clay. Ss then asked to play games, assigned to Success or Failure with Success Ss praised and rewarded.

**RESULTS:** Ss who observed Aggressive M were significantly more aggressive than those who saw Nonaggressive High Active M or those who engage in social interaction. Ss who played noncompetitively and viewed Aggressive M did not have significantly more total aggression than those viewing High Active M. Successful Ss displayed slightly more aggression than Failure Ss. For first

## 132 AFFECTIVE Aggressive (Cont.)

## RESULTS:

graders, presence of Aggressive or High-Active M-increased level of aggression of Success Ss tended to engage more in imitative aggressive behavior. Competition generally produced more high active behavior.

140 AFFECTIVE Aggression

Dubanoski, R. A., & Gordon, D. A.

"Imitative aggression in children as a function of observing a human model"

DEVELOPMENTAL PSYCHOLOGY, 1971, 4 (3), 489

**PURPOSE:** To assess the effect of an aggressive M and aggressive events on imitation, and to assess the facilitative effect of the M as a cue for permission of aggressive behavior.

**SUBJECT CHARACTERISTICS:** preschool boys and girls with mean CA of 4 years, 8 months

**MODEL CHARACTERISTICS:** peer male, 9 years

**INDEPENDENT VARIABLES:** Aggressive M; Aggressive Events without M

**DEPENDENT VARIABLES:** measure of imitation of aggressive response

**MATERIALS:** tape of M or of invisible manipulation of stimuli

**PROCEDURE:** Ss shown tape of M or M-Absent in aggressive situation with manipulation of stimuli.

**RESULTS:** M resulted in significantly more different kinds of imitative responses than M-Absent condition. More aggressive nonimitative responses in M-Absent than M condition.

150 AFFECTIVE Aggression

Grusec, J., & Mischel, W.

"Model's characteristics as determinants of social learning"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1966, 4 (2), 211-215

**PURPOSE:** To determine if the characteristics possessed by a M affect the degree to which observers learn the M's behavior.

**SUBJECT CHARACTERISTICS:** 28 boys and 28 girls from Stanford University Nursery School from 38 to 56 months

**MODEL CHARACTERISTICS:** adult female

**INDEPENDENT VARIABLES:** Nurturance with High Control; Nonnurturance with Low Control; Sex; Neutral and Aggressive Behavior

**DEPENDENT VARIABLES:** number of recalled neutral and aggressive behaviors

**MATERIALS:** toys including a cash register

**PROCEDURE:** S interacted with warm or neutral M who said she was a permanent or temporary teacher. M then played with S on the toy cash register performing neutral and aggressive behaviors. S offered rewards for M's behaviors that S could recall.

**RESULTS:** No significant sex differences. Ss with Nurturant with High Control M reproduced significantly more of M's behaviors.

## 157 AFFECTIVE Aggression

Hanratty, M. A., O'Neal, E., &amp; Sulzer, J. L.

"Effect of frustration upon imitation of aggression"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1972, 21 (1), 30-34

## PURPOSE:

To investigate some of Bandura's predictions that one function of exposure to unpunished aggressive Ms is to mitigate the observer's societally imposed inhibition against aggression, especially to specific aggressive behavior displayed by the M (in other words: displacement). Frustration would further facilitate a S's aggressive response after observing a M aggress. Frustration effects would be greatest where the individual is allowed to attack his frustrator.

## SUBJECT CHARACTERISTICS:

6 and 7 year old first grade boys in a parochial school

## MODEL CHARACTERISTICS:

adult male

## INDEPENDENT VARIABLES:

M; No M; Frustrator Target (clown partner); Nonfrustrator Target (child partner); No Frustration

## DEPENDENT VARIABLES:

imitative and nonimitative aggressive behavior toward the clown

## MATERIALS:

film of M, adult female clown, mallet, toy gun

## PROCEDURE:

Ss with M observed film of M aggressing an adult female dressed as a clown. M performed distinctive aggressive behaviors. Ss told they would not get prize previously promised to them because their partner, another child or the clown, had performed poorly. Ss allowed to be aggressive with clown.

## RESULTS:

Ss who had seen the film, who were frustrated displayed more aggression. Among frustrated Ss there was no significant effects between the frustrator target group and the non-

## 157 AFFECTIVE Aggression (Cont.)

## RESULTS:

frustrator target group. Novel or non-imitative attacks on the clown rarely occurred. Ss in the frustrated groups displayed more aggression than the control Ss. Viewing the film increased the imitative aggression of the frustrated Ss but had no effect on the imitative aggression of the other Ss.



## 161 AFFECTIVE Aggression

Hartman, D. P.

"Influence of symbolically modeled instrumental aggression and pain cues on aggressive behavior"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1969, 11 (3), 280-288

- PURPOSE:** To investigate the hypothesis that anger arousal determines the function of aggressive stimuli, and to assess the effects of exposure to instrumental aggressive responses and pain reactions on aggressive behavior.
- SUBJECT CHARACTERISTICS:** 72 male adolescent delinquents, 13-16 years
- MODEL CHARACTERISTICS:** peer M
- INDEPENDENT VARIABLES:** Aggression Arousal or Nonarousal; Focus on Aggressor or Aggressee; Degree of Aggression
- DEPENDENT VARIABLES:** duration and intensity of shocks administered to a partner
- MATERIALS:** ego involving game M film of 2 adolescent boys playing baseball, electric shock apparatus
- PROCEDURE:** Ss participated with unseen confederate peer (tape) who made derogatory or neutral remarks about S's performance. Ss shown film of nonaggressive baseball game or film boys fighting, focusing on aggressor's actions or aggressee's reaction. Ss given chance to administer electric shocks to another person when he made errors on a learning task.
- RESULTS:** Ss that saw the aggressive films behaved more aggressively than those who saw neutral film. Aggression Arousal Ss responded more punitively than Nonaroused Ss. Ss who observed film focusing on aggressee's reactions responded more aggressively than Ss who saw film focusing on the aggressor's

## 161 AFFECTIVE Aggression (Cont.)

## RESULTS:

actions. Ss with longer records of anti-social behavior were more punitive than Ss with less extensive records.

## 166 AFFECTIVE Aggression

Hicks, D. J.

"Imitation and retention of film-mediated aggressive peer and adult models"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1968, 2 (1), 97-100

**PURPOSE:** To investigate the relative effect of peer and adult Ms as transmitters of novel aggressive responses.

**SUBJECT CHARACTERISTICS:** 30 boys and 30 girls from 41-76 months enrolled at Chico State College Laboratory School

**MODEL CHARACTERISTICS:** adult male and female; peer male and female

**INDEPENDENT VARIABLES:** Aggressive Adult Male M; Aggressive Adult Female; Aggressive Peer Male; Aggressive Peer Female M; Sex of S

**DEPENDENT VARIABLES:** measure of imitation and non-imitation of modeled aggressive responses and of non-aggressive responses, description of imitative responses

**MATERIALS:** eight minute film of aggressive male or female, adult or peer M, two rooms with toys, including same toys as in film, film shown on television console

**PROCEDURE:** Pretest of physical and verbal aggression and aggression toward inanimate objects. S observed film of aggressive M. S frustrated by being taken to a room with toys, told to play, but then told toys were for other children. S then taken to another toy room with aggressive and non-aggressive toys to play. Responses scored. Retest six months later--no film, exposed to frustration, taken to experimental room to play. Retention--S then asked to recall film with promise of reinforcement. Descriptions recorded.

166 AFFECTIVE Aggression (Cont.)

RESULTS:

Imitation significantly greater for boys.  
All modeling conditions effective in  
shaping behavior responses. Peer male  
had strongest immediate effect while  
adult male M had stronger effect over  
time.

## 174 AFFECTIVE Aggression

Kuhn, D. Z., Madsen, C. H., Jr., & Becker, W. C.

"Effects of exposure to an aggressive model and 'frustration' on children's aggressive behavior"

CHILD DEVELOPMENT, 1967, 38, 739-745

**PURPOSE:** To test the effects of an aggressive M and frustration on the amount of aggression produced by a child.

**SUBJECT CHARACTERISTICS:** 100 3-4 year old boys and girls

**MODEL CHARACTERISTICS:** adult male

**INDEPENDENT VARIABLES:** Delayed Reward (Frustration); Neutral M; Aggressive M; Pretest Aggression; Sex

**DEPENDENT VARIABLES:** measure of imitative and nonimitative aggressive responses in pretest and posttest

**MATERIALS:** neutral film or aggressive film showing M displaying aggressive behaviors toward Bobo doll

**PROCEDURE:** Pretest taken of Ss' aggressive behaviors. S shown Neutral or Aggressive film. Ss with Delayed Reward told they did not pay attention to the film. S would not receive a promised treat until later. S then taken back to play room to measure his responses in interaction with the toys.

**RESULTS:** Delayed Reward did not affect the amount of aggression, in fact there was a trend toward inhibition of aggression. Correlations between pretest and experimental aggression were not significant. Aggressive M did have a significant effect on aggressive responses.

## 178 AFFECTIVE Aggression

Liebert, R. M., &amp; Baron, R. A.

"Some immediate effects of televised violence on children's behavior"

DEVELOPMENTAL PSYCHOLOGY, 1972, 6 (3), 469-475

- PURPOSE:** To measure effects of exposure to televised violence on willingness of children to hurt other children (interpersonal aggression) and aggression toward inanimate objects.
- SUBJECT CHARACTERISTICS:** 68 boys and 68 girls from Yellow Springs and Xenia, Ohio (liberal and conservative small towns) who were volunteers for a study on effects of television on children. Age groups were 5-6 and 8-9. Widely-varied economic backgrounds.
- MODEL CHARACTERISTICS:** television program with violent (sequence from "The Untouchables") or non-violent (track and field shots) sequence
- INDEPENDENT VARIABLES:** Sex; Age; Aggressive or Nonaggressive Television Program
- DEPENDENT VARIABLES:** measure of interpersonal aggression, willingness to hurt another child, and aggression toward inanimate objects
- MATERIALS:** room with violent or non-violent television program, room with button-pushing apparatus purported to hurt or help another child, and play room with aggressive and non-aggressive toys
- PROCEDURE:** Television in waiting room with tape of attention-getting sequences followed by either violent or non-violent program. S then tested for willingness to help or hurt another child through buttons supposedly connected to another room where another child was to be playing game. S then taken to play room with aggressive and non-aggressive toys where she or he played alone. Finally, S asked to recall television program and button-pushing game.

## 178 AFFECTIVE Aggression (Cont.)

## RESULTS:

S exposed to aggressive program engaged in longer attacks against "child victims" than Ss who watched non-violent program. Aggressive program also elicited higher levels of aggression play, especially with younger children.

## 189 AFFECTIVE Aggression

Lovaas, O. I.

"Effect of exposure to symbolic aggression on aggressive behavior".

CHILD DEVELOPMENT, 1961, 32, 37-44

- PURPOSE:** To assess effects of watching an aggressive or non-aggressive film.
- SUBJECT CHARACTERISTICS:** Kindergarten aged children; in Experiment I Ss were from middle- and upper-middle classes. In Experiment II, Ss were from lower class families. However, class differences were not analyzed separately.
- MODEL CHARACTERISTICS:** film cartoon figures
- INDEPENDENT VARIABLES:** Aggressive or Nonaggressive Film
- DEPENDENT VARIABLES:** aggressive or nonaggressive behavior
- MATERIALS:** playroom with toys, screen which S "operated", aggressive and nonaggressive films, bar-pressing apparatus.
- PROCEDURE:** S introduced to doll apparatus, asked to press bar which made dolls hit each other. S viewed aggressive or nonaggressive film which he controlled to ensure attention. Played with doll, bar-press again. Extinction procedures were introduced in the second experiment. In third experiment a ball apparatus was added. S could play with doll or ball toy.
- RESULTS:** In Experiments I and II, there were no significant results obtained. However, in Experiment III, it was found that Ss preferred the toys with the dolls hitting each other over the head to the ball game after watching the aggressive film.



## 195 AFFECTIVE Aggression

Madsen, C., Jr.

"Nurturance and modeling in preschoolers"

CHILD DEVELOPMENT, 1968, 39, 221-236

- PURPOSE:** To test three hypotheses: (a) A relatively long-term interaction (6 weeks) between nursery school teachers and pupils will enhance aggressive modeling. (b) Nurturant interactions between teachers and pupils will decrease playtime with toys "valued negatively" by the teachers. (c) Familiar "non-nurturant" models (teachers) will foster more imitative behavior than strange Ms..
- SUBJECT CHARACTERISTICS:** 20 boys and 20 girls (mean age 56.3 months), enrolled in summer nursery school program from upper middle class families
- MODEL CHARACTERISTICS:** two male graduate students (assistant teachers)
- INDEPENDENT VARIABLES:** Aggressive or Toy-Rejection Film; Nurturant or Nonnurturant Classroom; Familiar or Unfamiliar M; Sex
- DEPENDENT VARIABLES:** imitation of M's physical and verbal aggression and toy-rejection behaviors (i.e., Ms viewed on films)
- MATERIALS:** two nursery school classrooms organized on nurturant or nonnurturant basis, film with teacher as M or an unfamiliar M, aggressive film or toy-rejection film
- PROCEDURE:** The two classroom conditions existed for six weeks before testing. Baseline performance taken of S interaction with aggressive and toy-rejection toys in films. S observed film of teacher or unfamiliar M in aggressive film or film in which M played only with a robot, rejecting other toys. Behavior with two sets of toys was reassessed.

## 195 AFFECTIVE Aggression (Cont.)

## RESULTS:

Aggression modeling following filmed presentations was related to familiarity of M and sex of S. Boys were high in aggressive imitation and girls exhibited more nonimitative aggression. Filmed presentations decreased the relative amount of time preschoolers spent playing with a devalued toy. However, nurturance, familiarity, or sex of S appeared irrelevant. Nurturance was essentially ineffectual under both conditions, and the results from both experimental tasks demonstrated the importance of prior social learning histories.

## 210 AFFECTIVE Aggression

Nelson, J. D., Gelfand, D. M., & Hartmann, D. P.

"Children's aggression following competition and exposure to aggressive model"

CHILD DEVELOPMENT, 1969, 40, 1085-1097

- PURPOSE:** To investigate effects of experimentally-manipulated success and failure in competitive games, and exposure to modeled aggression upon children's aggressive behavior.
- SUBJECT CHARACTERISTICS:** 48 boys and 48 girls from 62-86 months enrolled in public elementary schools
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Aggressive M; Nonaggressive M; Sex; Success or Failure in Competitive Game; No Competition
- DEPENDENT VARIABLES:** measure of imitative physical and verbal aggression, partial imitation of aggression, nonimitative aggression and nonaggressive play
- MATERIALS:** mobile laboratory, two rooms with aggressive and nonaggressive toys, miniature bowling game, hand-strength test, M&Ms
- PROCEDURE:** Two Ss tested together (boy and girl). S either observed aggressive M or spent time in structured play with nonaggressive M. Success S won 5 out of 6 trials in competitive game with other S. Prizes for each trial plus verbal praise. Non-competitive S played and talked with E. Ss then separated into two rooms with identical aggressive and nonaggressive toys, including those M had played with.
- RESULTS:** Participation in competitive games increased aggression. Scale of most aggression was failure, success, no competition except in condition where girls exposed to aggressive

210 AFFECTIVE Aggression (Cont.)

RESULTS:

M at which time success Ss were slightly more aggressive than failure Ss. Exposure to aggressive M increased girls' but not boys' aggression. Boys more aggressive than girls only after exposure to non-aggressive M. Boys and girls with aggressive M were equally aggressive.

## 215 AFFECTIVE Aggression

Parten, D.A., &amp; Geshuri, Y.

"Learning of aggression as a function of presence of a human model, response intensity, and target of the response"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 11, 491-504

**PURPOSE:** To investigate the effects of M presence, high or low intensity of response and use of a surrogate or nonsurrogate on the learning of aggression.

**SUBJECT CHARACTERISTICS:** 56 boys and 56 girls from University of Iowa preschool, from 50-70 months old

**MODEL CHARACTERISTICS:** six year old peer male

**INDEPENDENT VARIABLES:** Presence or Absence of M; Low or High Intensity Response by M; Surrogate or Nonsurrogate Target

**DEPENDENT VARIABLES:** measure of imitative responses using same materials, same target and reproducing same activity as M, measure of intensity of imitative responses, measure of S's evaluation of M

**MATERIALS:** eight videotapes with M/no M playing aggressively with toys having either a surrogate target or nonsurrogate target

**PROCEDURE:** Ss observed videotape with M aggressively playing with toys intensely (forcefully hitting) or with low-intensity (hitting so slowly that surrogate or object did not move), with M hitting either surrogate or nonsurrogate objects. No M conditions similar except M not visible, materials appeared to move by themselves. After videotapes, Ss shown materials used on tape and asked to show what happened on tape with token reward for matching performance. Acquisition--stimulus materials given one at a time to S who was asked to demonstrate what happened on television,

## Z15 AFFECTIVE Aggressive (Cont.)

## PROCEDURE:

rewarded for demonstrations. Ss who had observed M shown several tubes of different heights and asked to choose tube for M, choosing small tube for mean M and large tube for M if he was not mean. Tube to be filled with candy.

## RESULTS:

Modeling had effect on intensity of response with high-intensity producing more responses, but modeling had no effect on frequency of imitation. Sex did not significantly interact with modeling or intensity, but boys produced more imitative responses. However, three girl Ss replaced because they cried when asked to demonstrate what they had seen. High-intensity M produced most responses, less-intense responding occurred with M-surrogate than with M-nonsurrogate. Intensity of imitative responses affected by intensity of observed events. Most Ss gave M highest reward.

## 227 AFFECTIVE Aggression

Rosekrans, M. A., &amp; Hartup, W. W.

"Imitative influences of consistent and inconsistent response consequences to a model on aggressive behavior in children"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 7 (4), 429-434

- PURPOSE:** To determine the effects of inconsistent reinforcement (i.e., successive reward and punishment) of a social M on imitative aggression in children.
- SUBJECT CHARACTERISTICS:** 64 nursery school children divided into two age groups, 36-58 months and 60-71 months
- MODEL CHARACTERISTICS:** two adult females served as M and E
- INDEPENDENT VARIABLES:** Sex; Age; M Rewarded; M Punished; M Inconsistently Reinforced; No M
- DEPENDENT VARIABLES:** S's imitative and nonimitative motor aggressive responses following modeling of aggression (emotional valuation)
- MATERIALS:** experimental playroom contained Bobo doll, mallet and pegboard, and other toys which could be used for aggressive or nonaggressive play
- PROCEDURE:** Training--E brought S individually to experimental room, where M was looking at the toys; E gave S some plastic animals to play with until M was finished with toys. M then performed four novel aggressive responses, each one twice, with appropriate accompanying verbalization. After each modeled aggressive response, E verbally rewarded or verbally punished M according to treatment conditions.
- RESULTS:** Ss exposed to an inconsistently reinforced M produced less imitative aggression than Ss exposed to a consistently rewarded M, but more imitative aggression than Ss exposed to a consistently punished M. No differences were found between Ss who

## 227 AFFECTIVE Aggression (Cont.)

## RESULTS:

observed an inconsistently reinforced M and those who observed no M. The response consequences to the M affected the performance of nonimitative aggression by younger Ss, but had no effect on nonimitative aggression for older Ss.



## 275 AFFECTIVE Aggression

Steuer, F. B., Applefield, J. M., & Smith, R.

"Televised aggression and the interpersonal aggression of preschool children"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 11, 442-447

- PURPOSE:** To test the effect of televised aggression on interpersonal aggression of children in interaction with other persons.
- SUBJECT CHARACTERISTICS:** Ten preschool children at the Frank Porter Graham Child Development Center in Chapel Hill, N. C. The children ranged from 41-60 months, with equal numbers of sex. Ss were mixed racially and socio-economically. Control and Experimental Ss matched for amount of time they watched television at home.
- MODEL CHARACTERISTICS:** Aggressive and nonaggressive television programs
- INDEPENDENT VARIABLES:** Exposure to Aggressive or Nonaggressive Television Programs
- DEPENDENT VARIABLES:** measure of interpersonal aggression responses to other children during free play
- MATERIALS:** two identical play rooms with aggressive and nonaggressive toys, aggressive and nonaggressive television films
- PROCEDURE:** Control and Experimental groups played separately in two experimental rooms and were observed for interpersonal aggressive behavior. Baseline recorded for first sessions. Experimental sessions had television program prior to free play, showing aggressive film to experimental Ss and non-aggressive films to Control Ss.
- RESULTS:** Matched control and Experimental Ss who had scored similarly during baseline sessions, differed markedly in three of the five pairs with the experimental Ss greatly increasing interpersonal aggression.

## 259 AFFECTIVE Aggression

Thelen, M. H.

"The effect of subject race, model race, and vicarious praise on vicarious learning"

CHILD DEVELOPMENT, 1971, 42, 972-979

- PURPOSE:** To investigate the effect of S's race, M's race, and praise of the M on the imitation of aggressive behavior.
- SUBJECT CHARACTERISTICS:** 32 White and 32 Black kindergarten and first grade males
- MODEL CHARACTERISTICS:** adult White male; adult Black male
- INDEPENDENT VARIABLES:** Race of M; Race of S; M Praised; M Not Praised
- DEPENDENT VARIABLES:** frequency of aggressive responses imitated during the recall phase
- MATERIALS:** film, inflatable animal
- PROCEDURE:** Black and White Ss were divided into experimental condition. Some Ss of each racial group watched a film of a Black M aggressing toward an inflated animal. The other Ss watched a white M aggressing toward the animal. In half of each of the above conditions the Black and White Ms were verbally praised by a White male. Ss were then left in a room with the inflatable animal and the objects the M had used for aggressing. Ss later were asked to recall what the man in the film did and the S was praised for each correct response.
- RESULTS:** The Ss who observed the White M recalled more of the M's behavior than Ss who observed the Black M. Black Ss who observed a M who was not praised recalled more of the M's motor behavior than Black Ss who observed a M who was praised and more than white Ss who observed a M who was not praised.

## 260 AFFECTIVE Aggression

Thelen, M. H., &amp; Soltz, W.

"The effect of vicarious reinforcement on imitation in two social-racial groups"

CHILD DEVELOPMENT, 1969, 40, 879-887

- PURPOSE: To investigate the effect of rate of vicarious reinforcement to an aggressive M on imitation under conditions of no direct reinforcement to the S, and to investigate the effects of M attractiveness.
- SUBJECT CHARACTERISTICS: Experiment I: 35 boys, 4-6 years, mostly Black from a low SES Head Start Class; Experiment II: 30 boys, 4-6 years, Anglo from a middle class laboratory school
- MODEL CHARACTERISTICS: adult male
- INDEPENDENT VARIABLES: M Continuous Reinforcement; M Intermittent Reinforcement; M No Reinforcement; High M Attractiveness; M Low Attractiveness; SES
- DEPENDENT VARIABLES: number of imitative aggressive behaviors
- MATERIALS: films of aggressive M; inflated doll
- METHODS: M was described to Ss as low or high in attractiveness. S viewed film of M aggressing against an inflated doll and being either reinforced for all or alternate aggressive acts, or receiving no reinforcement. S was left alone to play with the materials used by the M in the film. The second experiment was the same except that middle class Ss were used and one M condition received reinforcement at the end of the film.
- RESULTS: The Ss who observed the reinforced M imitated more, but not significantly more than the Ss who observed the nonreinforced M. In the second experiment, Ss in the

## 260 AFFECTIVE Aggression (Cont.)

## RESULTS:

positive vicarious reinforcement condition imitated significantly more than the Head Start Ss of Experiment I. The continuous reinforcement group imitated more than the group which received reinforcement at the end of the film.

## 267 AFFECTIVE Aggression

Walters, R. H., &amp; Willows, D. C.

"Imitative behavior of disturbed and nondisturbed children following exposure to aggressive and nonaggressive models"

CHILD DEVELOPMENT, 1968, 39, 79-89

- PURPOSE: To examine the hypothesis that disturbed children would display selective imitation of deviant Ms (in deference to nonaggressive Ms) and would exhibit a greater incidence of imitative aggressive behavior following exposure to a televised aggressive M than would nondisturbed children.
- SUBJECT CHARACTERISTICS: 24 emotionally disturbed boys (institutionalized, classed "undersocialized") and 24 nondisturbed boys (from a public school) with an age range of 7 years 4 months to 11 years 10 months. An additional 12 nondisturbed boys served as control Ss.
- MODEL CHARACTERISTICS: adult female
- INDEPENDENT VARIABLES: Nonaggressive M; Aggressive M; No M; Emotionally Disturbed or Nondisturbed S
- DEPENDENT VARIABLES: S's imitation of filmed M's behavior toward toys, either aggressive or nonaggressive; order in which S played with toys; attitude
- MATERIALS: film of M playing aggressively or nonaggressively with toys, film of toys without M, four sets of play materials
- PROCEDURE: E brought S individually to mobile laboratory observation room, and showed him the appropriate film sequence. Then E took S into experimental room, and left him alone to play with the toys for six minutes, during which time S's behavior was observed and recorded through one-way glass.

267 AFFECTIVE Aggression (Cont.)

RESULTS:

Comparisons among the nondisturbed groups indicated that the M films were effective for evoking imitative behavior. Disturbed Ss imitated the nonaggressive M less than nondisturbed Ss, but the samples did not differ in respect to imitation of aggression.

## 105 LANGUAGE Word and Syntax Learning

Bailey, J. S., Timbers, G. D., Phillips, E. L., &amp; Wolf, M. M.

"Modification of articulation errors of pre-delinquents by their peers"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1971, 4, 265-281

- PURPOSE:** To demonstrate the influence of peer Ms and reinforcement upon language learning by pre-juvenile males.
- SUBJECT CHARACTERISTICS:** 2 Anglo boys, 13 and 12, with economically deprived backgrounds, living in institutional settings
- MODEL CHARACTERISTICS:** peer Ms
- INDEPENDENT VARIABLES:** M; Feedback Peer Approval; Reinforcement
- DEPENDENT VARIABLES:** modification of language sounds
- MATERIALS:** 71 words containing target sounds, on cards; 84 picture cards for Study II
- PROCEDURE:** Two studies. Baseline testing of the words was carried out by having the S pronounce the words without feedback. Then treatment was instituted using multiple baseline procedure, first for "l" sound. The peers were given points for detecting incorrect utterances, and they then modeled correct pronunciation. There was an alternative set of procedures in which the peers received points for detecting correct utterances. All sounds were tested each time after the "l" sound was learned; then treatment focused on the "r" sound, etc. After criterion levels had been reached, Ss were presented with different words having the same phonemes as a measure of generalization. After one month's delay each S was posttested.
- RESULTS:** Improvements in pronunciation responses were detected as each type of training was introduced and these improvements

## 105 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

were maintained as each successive phoneme pronunciation skill was trained. These skills generalized to unfamiliar (untrained) words. Most of these skills were maintained over a one month delay period. These general findings were replicated with a second S. While both positive and negative schedule produced similar results, the negative schedule made the peers overly stringent on finding S's pronunciation adequacy.



## 111 LANGUAGE Word and Syntax Learning

Bandura, A., &amp; Harris, M. B.

"Modification of syntactic style"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1966, 4, 341-353

**PURPOSE:** To investigate the efficacy of modeling, reinforcement and attentional sets in modifying the syntactic style of children.

**SUBJECT CHARACTERISTICS:** 50 boys and 50 girls in second grade, middle class

**MODEL CHARACTERISTICS:** no information

**INDEPENDENT VARIABLES:** Reinforcement-Attentional Set; M-Reinforcement-Attentional Set; M; M Reinforcement; Sex; Passive-Prepositional Presentation; Prepositional-Passive Presentation

**DEPENDENT VARIABLES:** frequency of passive tense and prepositional phrases used by S

**MATERIALS:** common nouns presented on index cards

**PROCEDURE:** Ss shown 20 cards, each with a word on it, asked to make up sentences using the word. Reinforcement Attentional Set Ss told that they would receive a star for some of their sentences, and to try to figure out which sentences earned stars. M Ss observed M complete 15 sentences and then alternated sentences with M. M Reinforcement Ss received stars. M Reinforcement Attentional Set, combined all of above methods. Half of Ss given Passive-Prepositional Presentation, other half given the Prepositional-Passive Presentation.

**RESULTS:** Passive Tense, no significant sex differences, M Reinforcement Attentional Set and M Reinforcement Attentional Set did not differ from each other but were superior to Control and M groups. No significant sex differences.

## 124 LANGUAGE Word and Syntax Learning

Brigham, T. A., &amp; Sherman, J. A.

"An experimental analysis of verbal imitation in preschool children"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1968, 1 (2), 151-158

- PURPOSE:** To assess imitation of verbal responses.
- SUBJECT CHARACTERISTICS:** 4 year old boys, normal linguistic and physical development
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** Reinforcement for English Imitation; Reinforcement for Behavior Other Than English Imitation; Nonreinforced Pairing Russian and English
- DEPENDENT VARIABLES:** accurate pronunciation (imitation) of English and Russian words
- MATERIALS:** list of English and Russian words
- PROCEDURE:** E pronounced word. If S repeated word correctly, S received reward of token or candy and verbal reinforcement. When Russian word was presented and S imitated word, E presented new word ten seconds later. Next phase reinforced behavior other than imitation of English words, no S imitations reinforced, including Russian imitations.
- RESULTS:** The reinforcement of English words produced an increase in the correct pronunciation of Russian words. During second phase there was a drop in accurate pronunciation of English and Russian words. S improved pronunciation of nonreinforced Russian words, showing that it is not necessary to reinforce differentially every imitative verbal response to obtain a generalized improvement in accuracy.

## 128 LANGUAGE Word and Syntax Learning

Bufford, R. K.

"Discrimination and instructions as factors in the control of nonreinforced imitation"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 12, 35-50

## PURPOSE:

To compare discrimination hypothesis and instructions in controlling generalized imitation.

## SUBJECT CHARACTERISTICS:

6 children 5-7 years, 1 girl, 3 boys were retarded

## MODEL CHARACTERISTICS:

adult

## INDEPENDENT VARIABLES:

M; Reinforcement

## DEPENDENT VARIABLES:

English language nouns and German nouns

## MATERIALS:

M's verbal responses

## PROCEDURE:

The first experiment investigated the discrimination hypothesis by systematically reducing the number of responses in the reinforced class (German words). The second and third study evaluated instructing on nonreinforced responses. The effects of instruction "to say the words" "Do anything you want", and "Do not say nonreinforced words" were analyzed and evaluated.

## RESULTS:

The data though inconsistent, tended to support the discrimination hypothesis. Instructions not to say nonreinforced words resulted in reduced imitation. In general, it was concluded that reinforcers are not particularly powerful in generalized imitation studies. E's presence appears to be a major factor in controlling imitation in the absence of reinforcers. Implicit and explicit instructions have substantially influenced performance of nonreinforced responses. Finally, both discriminate and conditional reinforcement hypothesis are rejected in favor of a socio-instructional hypothesis of generalized imitation.

## 130 LANGUAGE Word and Syntax Learning

Carroll, W. R., Rosenthal, T. L., &amp; Brysha, C. G.

"The social transmission of grammatical parameters"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, In Press

- PURPOSE:** To examine the child's ability to induce rules governing the formal structure of modeled sentences, as well as his imitation of the word content and verb tenses as displayed by the M. Subsequent maintenance of sentence structure and tense changes, and effect of brief prompts was also studied.
- SUBJECT CHARACTERISTICS:** 80 third and fourth graders from public schools with comparable proportions of males and females in each condition.
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** Tense; Cue; No Cue; M; No M
- DEPENDENT VARIABLES:** S's imitative responses to modeled sentence structures and tenses, and S's production of sentences with new stimuli
- MATERIALS:** two sets of 12 pictures mounted on cards
- PROCEDURE:** Baseline, S asked to make up sentence for each card. Training, S observed M construct sentences using present, past or future tenses. Half of Ss prompted. Imitation, S again observed M, Ss asked to make up sentences. Generalization, Ss constructed sentences with second set of cards.
- RESULTS:** Ss with M imitated significantly more than Control Ss. With prompting Ss produced more imitative tense change. Ss exposed to M continued to produce significantly greater imitation of tense and sentence structure than did Control Ss. The tense displayed by M resulted in differential imitation of both tense and sentence structure in the present, past and future condition groups. Prompting failed to produce differential imitation.

## 134 LANGUAGE Word and Syntax Learning

Clark, H. B., Sherman, J. A., &amp; Kelly, K. K.

"Use of modeling and reinforcement to train generative sentence usage"

Paper presented at the meeting of the American Psychological Association, Washington, D. C., September, 1971

- PURPOSE:** To examine effects of modeling upon production of generative language behavior.
- SUBJECT CHARACTERISTICS:** 8 retarded and 4 culturally disadvantaged children who had good articulation and could imitate verbal stimuli at beginning of study, but had deficits in use of noun suffixes and tense verb inflections.
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** Reinforcement; Nonreinforcement
- DEPENDENT VARIABLES:** production of past, present and future tenses when cued by E
- MATERIALS:** verbal stimuli
- PROCEDURE:** Ss trained by modeling techniques in the phoneme "t" as used in past tense endings. E modeled the sentences at first by individual words, then by phrases, finally repeating the whole sentence. Ss then asked to imitate sentences without the verbal cues.
- RESULTS:** Ss could produce stimulus words without E giving cues.

## 145 LANGUAGE Word and Syntax Learning

Fraser, C., Bellugi, U., &amp; Brown, R.

"Control of grammar in imitation, comprehension, and production"

JOURNAL OF VERBAL LEARNING AND VERBAL BEHAVIOR, 1963, 2, 121-135

- PURPOSE:** To determine the relative difficulty of imitation, comprehension, and production of verbal responses.
- SUBJECT CHARACTERISTICS:** 12 three year old Anglo children
- MODEL CHARACTERISTICS:** 1.0 information
- INDEPENDENT VARIABLES:** Mass-nouns/Count nouns; Singular/Plural; Present Progressive/Past Progressive Tense; Present Progressive/Future Tense; Affirmation/Negation; Possessives; Subject/Object. Passive Voice; Indirect/Direct Object; Sex
- DEPENDENT VARIABLES:** imitation, comprehension and production responses of linguistic elements
- MATERIALS:** verbal stimuli; picture pairs
- PROCEUDRE:** The Ss were given three separate tests of each grammatical element in a randomized order. Those tests involved imitation responses, comprehension responses or production responses. To assess imitation, the S mainly had to reiterate E's statement which included each grammatical element. To measure comprehension, E introduced 2 pictures (for each element) produced an utterance and the S was required to point to the appropriate picture. To assess production, new pictures were introduced and described (without being individually designated). Then one picture was designated, and S was asked to describe it. If his verbal description included the correct grammatical element, he was scored for a production response.
- RESULTS:** Imitation responses were easiest, comprehension responses second in difficulty, and production responses most difficult.

## 152 LANGUAGE Word and Syntax Learning

Guess, D., Sailor, W., Rutherford, G., & Baer, D. M.

"An experimental analysis of linguistic development: The productive use of the plural morpheme"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1968, 1, 297-306

**PURPOSE:** To teach a child with no apparent plural morpheme responses in her repertoire to acquire and use a plural morpheme with novel untrained stimuli using modeling and reinforcement procedures.

**SUBJECT CHARACTERISTICS:** 10 year old severely retarded girl

**MODEL CHARACTERISTICS:** adult

**INDEPENDENT VARIABLES:** M; Reinforcement

**DEPENDENT VARIABLES:** production of plural morphemes

**MATERIALS:** common objects, food was used as a reinforcer (ice cream, jello, etc.).

**PROCEDURE:** The S was pretested and then trained in the following manner. She was asked to describe single or pairs of common objects. If she responded incorrectly, the correct label was presented for her to imitate. Correct utterances were reinforced by praise and consumables. In the first phase the S learned to label single objects; in the second phase she learned to label pairs of objects with the plural. Finally, the third phase involved a random sequence of single objects and pairs of objects. A reversal was then introduced to establish the functional relationship between treatment and the language response.

**RESULTS:** The procedures effectively trained the S to use a plural morpheme rule which generalized to novel untrained stimuli. The reverse<sup>2</sup> established that the training procedures create the observed results.

## 156 LANGUAGE Word and Syntax Learning

Hanlon, C. C.

"The effects of social isolation and characteristics of the model on accent imitation in fourth-grade children"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 11, 322-336

- PURPOSE:** To assess level of imitation of a M's dialect as a function of the M's status (nurturant or helpless), and as a result of the isolation of the S.
- SUBJECT CHARACTERISTICS:** fourth grade children, 25 girls, 27 boys
- MODEL CHARACTERISTICS:** adult male and female, speakers of "British English"
- INDEPENDENT VARIABLES:** Isolation; Non-Isolation; Helpless M; Nurturant M
- DEPENDENT VARIABLES:** amount of dialect imitation by S
- MATERIALS:** mobile laboratory, tape recorders, four puppets with airplane controls (Robin Hood Fairy Queen, little girl, little boy)
- PROCEDURE:** Half of Ss put into isolation for 20 minutes before the experiment. Ss asked to learn the role of a British character in a puppet play, and given part of Helpless (child) or Nurturant character (Fairy Queen or Robin Hood who rescue the child). S listened to tape of M reading part. S was then allowed to manipulate the puppets to perform the story.
- RESULTS:** Ss tended to imitate the nurturant M more than the helpless one. Effect of social isolation was independent of that for nurturance--helplessness of the M, but was consistent for both types of Ms. Boys failed to have an increased level of imitation of a nurturant M after social isolation--boys imitate less after social isolation than they do when taken directly from the classroom.



## 160 LANGUAGE Word and Syntax Learning

Harris, M. B., &amp; Hassemer, W. G.

"Some factors affecting the complexity of children's sentences: The effects of modeling age, sex, and bilingualism"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, In Press

- PURPOSE:** To study whether or not exposure to a M's simple or complex speech patterns will affect the length and complexity of a child's subsequent speech in monolingual children hearing English and bilingual children hearing Spanish and English.
- SUBJECT CHARACTERISTICS:** 96 second and fourth grade boys and girls, 16 in each grade spoke only English while 32 were able to answer at least simple questions in Spanish
- MODEL CHARACTERISTICS:** adult male and female, bilingual
- INDEPENDENT VARIABLES:** English Ss with English M, Spanish Ss with Spanish or English M; Grade; Sentence Order; Sex
- DEPENDENT VARIABLES:** length and complexity of sentence responses
- MATERIALS:** two sets of picture cards, one having simple or complex sentences in English or Spanish
- PROCEDURE:** Ss asked to make up sentences about the picture cards for twenty trials, then alternated with M. M either spoke in Spanish and gave Spanish sentences, spoke in English and gave English sentences, or spoke in English with Spanish sentences. M gave either complex or simple sentences first, then presenting other sentence type.
- RESULTS:** No significant effects of sex or language were found for sentence length or complexity. Ss in the complex phase gave longer, more complex sentences than in the base rate or simple phase. Fourth grade Ss made significantly longer sentences than second grade Ss.

## 173 LANGUAGE Word and Syntax Learning

Lahey, B. B.

"Modification of the frequency of descriptive adjectives in the speech of Head Start children through modeling without reinforcement"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1971, 4 (1), 19-22

**PURPOSE:** To assess effect of modeling upon production of adjectives.

**SUBJECT CHARACTERISTICS:** 10 Head Start children ranging in age from 4 years to 4 years 9 months

**MODEL CHARACTERISTICS:** adult

**INDEPENDENT VARIABLES:** No Adjective Use by M; Adjective Use by M

**DEPENDENT VARIABLES:** production of adjectives following modeling

**MATERIALS:** seven boxes of brightly colored toys familiar to children

**PROCEDURE:** S asked to play tape recorder game. M picked up toy and described it using either no adjectives or several adjectives. S and M alternated in describing objects.

**RESULTS:** At baseline (1st 2 trials) most Ss had low levels of adjective use. One S, assigned to the No Adjective group, had a high level of adjective use which declined following the modeling session. Ss who received the Adjective treatment had an increase in their use of adjectives. This increase in the production of adjectives was not limited to those used by the M, but was an increase in the production of the entire "class" of adjectives. The author believes that since this increase was achieved without the use of reinforcement, the adjectives were already in the S's repertoire, but had to be brought out by using modeling procedures.

## 184 LANGUAGE Word and Syntax Learning

Liebert, R. M., Odom, R. D., Mill, J. H., &amp; Huff, R. L.

"Effects of age and rule familiarity on the production of modeled language constructions"

DEVELOPMENTAL PSYCHOLOGY, 1969, 1 (2), 108-112

- PURPOSE:** To investigate the effects of age and familiarity on children and adoption of modeled language rule.
- SUBJECT CHARACTERISTICS:** 84 white, middle class children from Nashville enrolled in private summer recreation programs, three age groups (CA 5.8, 8.4, 14.1)
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Reinforcement; Age; Sex; English Rule Construction (ER); New Rule Construction (NR)
- DEPENDENT VARIABLES:** repetition and production of grammatical constructions using either English rule or New rule patterns
- MATERIALS:** verbal stimuli of 95 nouns commonly known to youngest age group, mobile laboratory, tape recorder
- PROCEDURE:** M introduced as a S. Preliminary trials to ensure familiarity and base-rate period. Training: 20 S sentences, 30 M sentences. M and S reinforced for relevant sentences. Familiar English Rule condition (ER) sentences constructed with preposition-article-noun. S repeated M's relevant sentences. Unfamiliar or New Rule (NR) ungrammatical sentences with article-noun-preposition.
- RESULTS:** No sex differences. Fewer repetition errors in ER than NR, and fewer errors by oldest group. Age was generally a positive factor in reproduction. Oldest group had greatest reproduction increments in NR. Greatest effect was age, while rule familiarity produced only trends.

## 192 LANGUAGE Word and Syntax Learning

Lovell, K., &amp; Dixon, E. M.

"The growth of the control of grammar in imitation, comprehension, and production"

JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY, 1967, 8, 31-39

- PURPOSE:** To replicate Fraser, Brown and Bellugi (1963) study with children of varying ages and mental capabilities to determine the generability of the Fraser et al results.
- SUBJECT CHARACTERISTICS:** 100 children, 2-6, normal or retarded, middle class, conducted in England
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** M; Age; Mass-noun/count noun; Singular/Plural Inflection; Singular/Plural "is" or "are"; Present Progressive/Past Tense; Present Progressive/Future Tense; Affirmative/Negative; Singular/Plural of Third Person Possessive Nouns; Subject/Object Active Voice; Subject/Object Passive Voice; Indirect/Direct Object
- DEPENDENT VARIABLES:** imitation, comprehension, and production responses of linguistic elements
- MATERIALS:** verbal stimuli, pictures
- PROCEDURE:** The Ss were given three separate tests of each grammatical element in a randomized order. Three types of linguistic responses were made: imitation, comprehension, and production. To assess imitation, the S simply had to reiterate E's statement. To measure comprehension, E introduced two pictures, produced an utterance and the S was required to point to the appropriate picture. To assess production, new pictures were introduced and both were named (described) without pointing to the one described. Then one picture was pointed to and the S was asked to describe it. If his description included the correct element, he was scored for production.

## 192 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

In all age groups (2-6) with both normal and retarded Ss, imitation responses occurred earlier in development (were easier) than comprehension, and comprehension occurred before production. Further, the rank difficulty of the items remained constant across tasks, age levels for items within a given task, and for items within a given task across normal and retarded Ss.

## 212 LANGUAGE Word and Syntax Learning

Odom, R. D., Liebert, R. M., & Fernandez, L. E.

"Effects of symbolic modeling on the syntactical productions of retardates"

PSYCHONOMIC SCIENCE, 1969, 17 (2), 104-105

**PURPOSE:**

To investigate the effects of symbolic modeling of syntactical constructions on the subsequent sentence productions of educable mentally retarded children.

**SUBJECT CHARACTERISTICS:**

15 boys and 15 girls, ranging in age from 14.1 to 15.9 years, with scores of 75-85 on PPVT.

**MODEL CHARACTERISTICS:**

M on tape was male voice

**INDEPENDENT VARIABLES:**

Sentences M Prepositional Phrases or No Prepositional Phrases; Vicarious Reward or No Reward; No M

**DEPENDENT VARIABLES:**

verbal imitation of M by making sentences using prepositional phrases

**MATERIALS:**

verbal stimuli, a tape-recording of a M responding to nouns by producing sentences, some of which contained prepositional phrases

**PROCEDURE:**

Baseline taken of sentences S used with noun stimuli. S heard tape of M responding to noun stimuli, 15 sentences had prepositional phrases, the other five did not. When the M was rewarded, he was praised for the prepositional sentences. S then responded, receiving praise and a token for sentences with prepositional phrases. Ss retested three weeks later.

**RESULTS:**

The M groups showed significantly greater production of specific, relevant constructions than No M Control Ss who were also rewarded for such constructions. Three weeks following the initial task, a posttest indicated that the effect of modeling was durable.

## 213 LANGUAGE Word and Syntax Learning

Odom, R. D., Liebert, R. M., &amp; Hill, J. H.

"The effects of modeling cues, reward and attentional set on the production of grammatical and ungrammatical syntactic constructions"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1968, 6, 131-140

- PURPOSE:** To test the effects of successful repetition on the incidence of novel, relevant constructions in the non-repetitive constructions of S. Also, to test whether S's failure to learn New Rule constructions in Experiment I was misperception of the New Rule as an English Rule or that reordering of New Rule into English Rule was an active process.
- SUBJECT CHARACTERISTICS:** Experiment I, 27 boys and 27 girls from second grade in a middle class Nashville school; Experiment II, 12 boys and 11 girls from another second grade class in the same school
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Experiment I, M and Reward of English Rule Sentence Construction (ER); M and Reward of New Rule Sentence Construction (NR); Experiment II, English Rule Repeat of M's Rewarded Constructions (ERR), New Rule Repeat of M's Rewarded Constructions (ERR), New Rule Repeat of M's Rewarded Constructions (NRR)
- DEPENDENT VARIABLES:** measure of imitation of ER, NR, ERR, and NRR sentences
- MATERIALS:** verbal stimuli, 95 commonly known nouns by second graders
- PROCEDURE:** M introduced as S, E testing ways people make up sentences by using nouns on cards. S made base rate of 20 sentences. ER, most of M's sentences contained preposition for which he was rewarded for making ER construction. M and S then alternated. NR was the same except that M's sentences were ungrammatical. Experiment II was the same except that S repeated M's rewarded constructions.

## 213 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

In Experiment I, no S produced NR sentences in base rate, nor did any ER or Control S make any NR sentences in training. Negligible NR constructions in NR condition. The two experimental groups did not differ in ER construction, and both exceeded Control. In Experiment II, one S in NRR group produced one NR construction in training. No other NR constructions were made. Both groups increased ER construction in training. No other significant differences were found.



## 222 LANGUAGE Word and Syntax Learning

Rickard, H. C., Ellis, N. R., Barnhart, S., &amp; Holt, M.

"Subject-model sexual status and verbal imitative performance in kindergarten children"

DEVELOPMENTAL PSYCHOLOGY, 1970, 3 (3), 405

**PURPOSE:** To investigate the effects of the sex of the M in relation to the sex of the S.

**SUBJECT CHARACTERISTICS:** white middle class kindergarteners

**MODEL CHARACTERISTICS:** adult male and female

**INDEPENDENT VARIABLES:** Sex of S; Sex of M; Number of Animal Words Said by M

**DEPENDENT VARIABLES:** number and frequency of matching verbal responses to the M

**MATERIALS:** tapes of Ms, initially there were no animal names, then contained 9, 21, 33, or 47 animal names

**PROCEDURE:** Ss wore earphones which allowed them to hear the prerecorded tapes of the Ms. Ss heard a male M or female M. S would hear 5 words of the tape and then upon being given a signal would respond himself.

**RESULTS:** No significant effect due to the sex of the M, the sex of the S or their interaction. Ss did imitate behavior of both Ms at a high level.

224 LANGUAGE Word and Syntax Learning

Risley, T. R., & Reynolds, N. J.

"Emphasis as a prompt for verbal imitation"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1970, 3 (3), 185-190

**PURPOSE:** To investigate the role of emphasizing certain words in a verbal presentation in determining which aspects of that presentation preschool children would imitate.

**SUBJECT CHARACTERISTICS:** Experiment I, two boys and one girl, 5 years, enrolled in kindergarten, disadvantaged SES; Experiment II, two girls and one boy, 4 years, enrolled in pre-school, disadvantaged SES

**MODEL CHARACTERISTICS:** teacher

**INDEPENDENT VARIABLES:** Stressed or Unstressed Words; Percentage of Stressed Words (varied from 32%--one word per phrase, 16%--one word per two phrases, 8%--one word in one phrase, to 4%--one word in half of sentences); One to Five Phrase Length Sentences; Reinforcement

**DEPENDENT VARIABLES:** imitation-repetition of phrase words presented by M

**MATERIALS:** verbal stim-li (short sentences), candy, tape recorder

**PROCEDURE:** Ss tested individually over a period of time. M&Ms given after S responded to each sentence, ten sentences per day using one to five phrase sentences over 48 sessions. More stressed variables added for Experiment II.

**RESULTS:** Imitation a function of sentence length. Ss imitated completely one to two phrase sentences and two phrases or five to eight words in longer sentences. Generally

## 224 LANGUAGE. Word and Syntax Learning (Cont.)

## RESULTS:

imitated complete phrases with 32% stress, no difference in imitation of stressed or unstressed words. With 8% stress, two Ss imitated all stress words and other S imitated more stressed than unstressed words, and all imitated all stress words in 4% condition. The percentage of stressed words increased the chance of S imitating.

## 233 LANGUAGE Word and Syntax Learning

Rosenthal, T. L., &amp; Carroll, W. R.

"Factors in vicarious modification of complex grammatical parameters

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1972, 63 (2), 174-178

- PURPOSE:** To determine the efficacy of modeling in increasing the use of complex sentences and the past perfect in disadvantaged Mexican-American youngsters.
- SUBJECT CHARACTERISTICS:** seventh grade boys and girls, mostly Mexican-American disadvantaged
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Sex; Strong or Weak Instructions; Reward (incentive) or No Reward (no incentive); Presentation of Instructions Before or After M's Demonstration
- DEPENDENT VARIABLES:** increase from baseline in the use of complex sentences and sentences containing the past perfect
- MATERIALS:** mimeographed word lists, chalk board for M
- PROCEDURE:** Ss were seen in groups of ten of the same sex. They were given mimeographed sheets of words and asked to make up sentences using these words. Ss were exposed to a M writing sentences on the blackboard which were complex and contained the past perfect tense. In one group the S received strong attentional instructions in the other group they received weak instructions. In one group the Ss were told that they would be given \$20 for a group party if they did well in the other group no incentive was given. In one group the instructions and incentive information was given before the M's presentation, in the other after the presentation. Ss were given another mimeographed word list and told to make up sentences.

## 233 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

Modeling significantly increased the use of complex sentences and the past perfect. Strong instructions produced more complex sentences and more past perfect than weak instructions. Incentive and presenting instructions and incentive before presentation of the M made no significant difference. Boys outperformed girls in making complex sentences and using the past perfect. No significant interactions between the variables were found.

## 235 LANGUAGE Word and Syntax Learning

Rosenthal, T. L., &amp; White, G. M.

"Initial probability, rehearsal, and constraint in associative class selection"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1972, 4, In Press

- PURPOSE:** To determine the effects of modeling on children's simple verbal responses, with attention to the effects of "meaningfulness", overt rehearsal, constraining versus permissive instructions, and reduction in explicit constraints to imitate.
- SUBJECT CHARACTERISTICS:** Experiment I: 56 boys and 56 girls, third graders from low-income public schools; Experiment II: 48 boys and 48 girls, third graders, similar SES as Ss in Experiment I
- MODEL CHARACTERISTICS:** Experiment I: adult male E and adult male M; Experiment II: M and E exchanged roles from those they had in first experiment
- INDEPENDENT VARIABLES:** Nouns; Verbs; Colors; M; Rehearsal; Constraining Instructions; Permissive instructions; Sex
- DEPENDENT VARIABLES:** S's cognition of response class in modeled performance of language task, and his application of it in later task phases
- MATERIALS:** response sheets given to each S to write on, with stimulus word and three choices for an associative word response; a similar version, only larger, was on a board in experimental room, used by M for his performance
- PROCEDURE:** Experiment I: Baseline taken of S's associative word response to stimulus words. S observed M or was helped in a rehearsal in responding to stimulus words which were nouns, verbs or colors. Ss were then given new response sheets and told to pick the same words M had. New response

## 235 LANGUAGE Word and Syntax Learning (Cont.)

## PROCEDURE:

sheets were then given, S could choose the same words as M or make his own choice. Experiment II: Procedure identical to Experiment I except that Ss were not told to copy M's responses.

## RESULTS:

Under strong directions to emulate the M, all experimental groups increased selection of the associate classes modeled. Later, in a free-preference phase, both noun and arbitrary choices were reduced but not choice of intermediate probability verbs. Overt rehearsal did not affect response. Under permissive emulation directions, all groups increased selection of the modeled associate classes in imitation, with no significant drops found in free-preference. Overt rehearsal's only effect was to reduce color associate choices.

## 236 LANGUAGE Word and Syntax Learning

Rosenthal, T. L., &amp; Whitebook, J. S.

"Incentives versus instructions in transmitting grammatical parameters with experimenter as model"

BEHAVIOUR RESEARCH AND THERAPY, 1970, 8, 189-196

**PURPOSE:** To assess effect of incentive and instructions in modeling sentence structures and patterns in third and fourth grade Ss.

**SUBJECT CHARACTERISTICS:** 93 children in third and fourth grades

**MODEL CHARACTERISTICS:** adult

**INDEPENDENT VARIABLES:** M; No M; Incentive, No Incentive; Specific Instructions; Age; Sex

**DEPENDENT VARIABLES:** Ss to reproduce as closely as possible the structure and content of modeled sentences and questions

**MATERIALS:** two sets of picture cards

**PROCEDURE:** Ss shown baseline set of pictures and asked to make up a sentence about each picture. S was told to listen to and learn from the M, that he would receive a dime at the end of the game, or S was told to listen to the M, that S would later be tested to see how well he had learned. S was then tested on the same and new stimulus material.

**RESULTS:** Ss in the external incentive condition tended to reproduce more accurate imitations than did Ss in the specific instructions or control groups. There were no main effects for age or sex.



## 244 LANGUAGE Word and Syntax Learning

Sarason, I. G., Pederson, A. M., &amp; Nyman, B.

"Test anxiety and the observation of models"

JOURNAL OF PERSONALITY, 1968, 36 (3), 493-511

- PURPOSE:** To examine the effects of modeling on high test anxiety scorers in a verbal learning experiment.
- SUBJECT CHARACTERISTICS:** 252 female college undergraduates, assigned to high, middle, and low test anxious groups on the basis of their scores on the Test Anxiety Scale (TAS, Sarason, 1962)
- MODEL CHARACTERISTICS:** adult female students, selected from advanced undergraduate psychology courses were used as Ms
- INDEPENDENT VARIABLES:** High, Middle or Low Anxiety; Observation; Reverse Observation; Rating; Rate of M Learning
- DEPENDENT VARIABLES:** Ss' memory-anticipation performance on two lists of nonsense words, following the various experimental treatments
- MATERIALS:** observation room which S could use, experimental room, two lists of nonsense words, "memory drum" which indicated stimuli
- PROCEDURE:** S was to learn the words so that she could anticipate the one coming into view before it actually appeared on the memory drum. In the No M conditions, S was either shown how the memory drum worked and given the two lists, or not shown how the drum worked and asked to perform the memory-anticipation task, or S first observed one list before working on the second. In the M conditions S observed a M learn quickly or slowly, or observed M without the memory drum indicating responses, or observed M without the drum and rated M's performance.

## 244 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

The hypothesis that high test anxiety persons are more active cue-seekers than are other persons was supported by the experimental results. The observation of a M did enhance the high and middle test anxiety Ss' performance on the experimental learning task, more than did the same observation by low TAS Ss.

## 245 LANGUAGE Word and Syntax Learning

Scholes, R. J.

"On functors and contentives in children's imitations of word strings"

JOURNAL OF VERBAL LEARNING AND VERBAL BEHAVIOR, 1970, 9, 167-170

- PURPOSE:** To explore the strategy by which young children in an imitation task select which words are to be retained and which words are to be deleted, according to the categories of content words (contentives) and function words (functors).
- SUBJECT CHARACTERISTICS:** 11 children, ranging in age from 3 years 1 month to 4 years 6 months (mean age: 3 years 11 months)
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Well-Formed Word Strings; Ill-Ordered Word Strings; Function plus Nonsense Words; Content plus Nonsense Words
- DEPENDENT VARIABLES:** imitation of word strings, number of words attempted and deleted by S
- MATERIALS:** tape recorded word strings (3 to 5 words in length), of 3 word-string types, presented in 2 sets, which were mixed together for the task: Set I, well-formed (WF), syntactically well-formed but semantically anomalous, syntactically ill-ordered; and Set II, nonsense words substituted for the function or content words of Set I strings, resulting in 3 examples of each string type for each of 2 conditions: function plus nonsense words (NC) and content plus nonsense words (NF)
- PROCEDURE:** Tape-recorded word-strings were presented in experimental room to each S by E, giving S as much time as he needed to respond before giving next word string. S's responses were tape-recorded.

## 245 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

Data obtained indicated that the S's deletion of content words was unaffected by deviances from full well-formedness. The S's differential retention of function and content words is stringent for WF strings, also obtains to a lesser extent if the string is syntactically deviant, but disappears if the string is anomalous. The data show that if the S is presented with strings of words, some of which are nonsense and some of which are real functors, no differential deletions obtain. If, on the other hand, the nonsense words are accompanied by real contentives, a larger proportion of the nonsense items are deleted--larger than the content words in the same strings and larger than the nonsense items accompanied by functors.

## 246 LANGUAGE Word and Syntax Learning

Scholes, R. J.

"The role of grammaticality in the imitation of word strings by children and adults"

JOURNAL OF VERBAL LEARNING AND VERBAL BEHAVIOR, 1969, 8, 225-228

- PURPOSE:** To study the importance of suprasegmental features (stress, intonation, and disjuncture) and the approximation to sentencehood of the stimulus word string for the sentential and nonsentential imitation strategies of children and adults.
- SUBJECT CHARACTERISTICS:** two sets of Ss: 21 adult Ss; 43 child Ss, ranging in age from 3 years 4 months to 5 years 10 months
- MODEL CHARACTERISTICS:** adult female speaker on tape-recording; adult E who recorded S's imitative responses
- INDEPENDENT VARIABLES:** Grammatical and Meaningful String; Grammatical but Anomalous String; Permuted Word Order of the Major Constituents; Permuted Word Order within the Major Constituents; Permuted Word Order within Constituents and Constituent Order; Age
- DEPENDENT VARIABLES:** imitation of modeled word strings, and errors made on task
- MATERIALS:** tape-recorded word strings in citation form (no vocal inflections) of two through eight word strings (two and three word strings were "warm ups", not scored), which were made from segments of female adult's recorded list of 171 words, with five-second intervals between strings.
- PROCEDURE:** Tape-recordings were played for Ss in experimental room by E, and S's responses were both tape-recorded and written down by E.

## 246 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

For adult Ss, far fewer errors were made when the word string was grammatically well-formed than when it was not, and the absence of suprasegmentals did not interfere with their ability to distinguish sentences from nonsentences. A direct comparison of adult and child data is not possible since the number of child Ss varied from 43 for four-word strings to 3 for eight-word strings. Since all four groups of children discussed above participated on the four-word strings, their performance on this set was used as the measure of maturational effects on the imitation task. Three year old children treated all string types similarly. Within a short time, however, the child acquired the adult's ability to use grammatical cues for sentencehood. Error analysis was made, the results showing that addition and replacement errors were rare with adult Ss, but fairly common with children. By and large, the words added or used as replacements had occurred in previously-heard word strings.

## 261 LANGUAGE Word and Syntax Learning

Turner, E. A., &amp; Rommetveit, R.

"The acquisition of sentence voice and reversibility"

CHILD DEVELOPMENT, 1967, 38 (3), 649-660

- PURPOSE:** To investigate the hypothesis that there are levels of sentence complexity, determined by both semantic and syntactic factors, which the study analyzed in terms of active and passive, reversible and non-reversible sentence structures.
- SUBJECT CHARACTERISTICS:** 24 boys and 24 girls, five age levels from 4-9
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** Reversible or Nonreversible; Passive Voice; Active Voice; Sex
- DEPENDENT VARIABLES:** S's correct imitation of modeled sentences, and his eventual production of new sentences using the task rules for semantic and syntactic order
- MATERIALS:** groups of six sentences and corresponding pictures were used, including nonreversible sentences, and two lists of reversible sentences
- PROCEDURE:** Each S was given three types of tasks-- imitation, comprehension, and production. On each task, one of each of the four sentence types (nonreversible active; non-reversible passive; reversible active; reversible passive) was given to S. Imitation- two sentences were read at a time by M, and S was instructed to repeat them after M. Comprehension- a single picture was shown to S by M, who gave examples of nonreversible sentences in correct and in reversed order, asking S which was correct name for picture. Production- similar to comprehension task, except that S was asked to produce the correct name for the picture by himself.

## 261 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

There was a significant tendency for scores to increase with age, for active-voice sentences to be responded to correctly more frequently than passive-voice sentences, for nonreversible sentences to be answered correctly more frequently than nonreversible sentences, and for scores to increase from the imitation task to the production task.



## 263 LANGUAGE Word and Syntax Learning

Van Wagenen, R. K., &amp; Travers, R. M. W.

"Learning under conditions of direct and vicarious reinforcement"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1963, 54 (6), 356-362

- PURPOSE:** To investigate the effect of direct and vicarious reinforcement and teacher's interaction on learning.
- SUBJECT CHARACTERISTICS:** 91 boys and 89 girls from fourth, fifth, and sixth grades in public elementary schools in Salt Lake City. Groups equated by reading scores.
- MODEL CHARACTERISTICS:** experienced teacher
- INDEPENDENT VARIABLES:** Ss learning in Group Presentation: Ss partially interacting with teacher-E; Ss not interacting with T-E; Ss learning in Isolation: feedback from Teaching Machine; Feedback from Teaching Machine and E
- DEPENDENT VARIABLES:** measure of correct responses on German Vocabulary Test after training
- MATERIALS:** Group administration; German and English words printed on cards; Isolation: words presented by teaching machine
- PROCEDURE:** Group Presentation groups of eight, T-E presented German word and two English words, one which matched German word over three-day period, Simulated classroom. Partial Verbal Interaction- E interacted with odd-numbered Ss one at a time. S verbally reinforced for correct response. No Verbal Interaction- even numbered Ss had no verbal interaction with E. Isolation with Machine Feedback- S in front of teaching machine which presented words. S did not have to make verbal or written response. Machine gave correct answer. Isolation with Machine and E Feedback- S said his response, machine displayed correct response, E reinforced correct answers. German vocabulary test given to Ss.

## 263 LANGUAGE Word and Syntax Learning (Cont.)

## RESULTS:

Learning declined over three days of training. Classroom with interaction and Machine with Machine Feedback superior to other two conditions. For simulated classroom with interaction, Ss learned more with items they learned from feedback with teacher than those vicariously experienced.

## 270 LANGUAGE Word and Syntax Learning

Wheeler, A. J., &amp; Sulzer, B.

"Operant training and generalization of a verbal response form in a speech-deficient child"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1970, 3, 139-147

- PURPOSE:** To train a child with limited language skills to use articles and auxillary verbs in his regular speech using modeling and reinforcement procedures.
- SUBJECT CHARACTERISTICS:** 8 year old boy diagnosed as brain damaged, autistic and retarded
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** M; Reinforcement
- DEPENDENT VARIABLES:** articles and auxillary verbs; language response
- MATERIALS:** 13 picture cards from Peabody Language Development Kit (American Guidance Service Inc., 1967) which depicted people in common situations.
- PROCEDURE:** The S spoke "telegraphic" English-- sentences not containing articles or auxillary verbs. The S was presented with pictures and asked to describe them. The M then verbally displayed a complete sentence or portion of a sentence for the S to imitate and reinforcement (tokens) were made contingent upon the S's imitation of the M's statement or correct production of a complete sentence without a M's prompt.
- RESULTS:** These procedures were effective in training the S to produce more nearly complete (containing articles and auxillary verbs) sentences describing pictures used during training and novel untrained pictures. Reversal procedures established the effectiveness of treatment in producing those results.

## 174 LANGUAGE Question-Asking

Lamal, P. A.

"Imitation learning of information-processing

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 12, 223-227

**PURPOSE:** To assess effect of modeling upon a type of verbal behavior (question-asking).

**SUBJECT CHARACTERISTICS:** 72 children of both sexes in third, fifth, and seventh grades

**MODEL CHARACTERISTICS:** adult male and female

**INDEPENDENT VARIABLES:** Sex of S; Sex of M; Grade; Hypothesis-Scanning M; Constraint-Seeking M; Control

**DEPENDENT VARIABLES:** use of different types of information-processing as a result of observation of a M

**MATERIALS:** question-asking game

**PROCEDURE:** S and M played a question-asking game similar to "Twenty Questions". M asked questions which were Hypothesis-Scanning or Constraint-Seeking. S then played game.

**RESULTS:** Ss who had observed a M asking Constraint-Seeking questions asked a fewer number of questions to attain goal. The Constraint-Seeking questions included more than two items while Hypothesis-Scanning questions included only one item. Fifth graders had a shorter time than third graders to achieve solution. There was no difference observed between seventh and fifth graders. No effect was found to interact with either Sex of S or Sex of M.

## 175 LANGUAGE Question-Asking

Laughlin, P. R., Moss, I. L., & Miller, S. M.

"Information-processing in children as a function of adult model, stimulus display, school grade, and sex"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1969, 60 (3), 188-193

- PURPOSE:** To assess the effect of modeling on category of question-asking behavior used.
- SUBJECT CHARACTERISTICS:** 216 children from third, fifth or seventh grade, in parochial grade schools
- MODEL CHARACTERISTICS:** adult male and female
- INDEPENDENT VARIABLES:** Hypothesis-Scanning M; Constraint-Seeking M; Pictorial or Verbal Stimulus Display; Grade; Sex
- DEPENDENT VARIABLES:** number of questions required by S to reach goal (correct guess of object thought about by E)
- MATERIALS:** pictorial displays of common objects and verbal displays of names of common objects, slips of papers matching each display object
- PROCEDURE:** The game consisted of choosing a slip of paper, then asking questions to find out which item the paper matched. S exposed to either Constraint-Seeking which was more efficient, or Hypothesis-Scanning types of questions by M. S then played the game.
- RESULTS:** Third graders in the study used more constraint-seeking questions, and this was not decreased or increased by use of the M. The fifth and seventh graders used more constraint-seeking questions with the Constraint-Seeking M, and were able to resist the Hypothesis-Seeking M. The type of display (pictorial or verbal) had no effect upon the number of questions used.

## 237 LANGUAGE Question-Asking

Rosenthal, T. L., &amp; Zimmerman, B. J.

"Instructional specificity and outcome expectation in observationally-induced question formulation"

JOURNAL OF EDUCATIONAL PSYCHOLOGY, 1972, In Press

- PURPOSE:** To examine the spontaneous and the M-induced production of a valuational style of inquiry in third grade children.
- SUBJECT CHARACTERISTICS:** 64 boys and 64 girls, third graders in middle class public school
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Implicit Instructions (Control); Explicit Instructions; Pattern Instructions; Mapping Instructions; Favorable Expectations; Neutral Expectations; Sex
- DEPENDENT VARIABLES:** S's cognition and subsequent production of M's valuational-type questions
- MATERIALS:** two sets of pictures showing same-colored or variously-colored common objects
- PROCEDURE:** Baseline taken of S's question-asking about the cards. Half of Ss told that they should do well on the game. S then told to watch M carefully, or to learn M's questions and imitate them, or learn M's questions, figuring out their pattern, or to learn M's patterns and imitate them. Ss were then presented with new picture cards and told to make up a question about each one. S asked how he had done on the game.
- RESULTS:** Provision of a favorable versus a neutral outcome-expectation, and sex of S failed to influence the results. All M groups displayed strong value-question increases over baseline which, without further training, they generalized to a new set of stimulus pictures. Four instructional variations proved to differ significantly in the post-modeling imitation phase but not in generalization.

## 239 LANGUAGE Question-Asking

Rosenthal, T. L., Zimmerman, B. J., &amp; Durning, K.

"Observationally induced changes in children's interrogative classes"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1970, 15 (4), 681-688

- PURPOSE:** To examine M's influence on information seeking of Ss.
- SUBJECT CHARACTERISTICS:** 70 boys and 70 girls from sixth grade classes in four Tucson, Arizona elementary schools. High proportion of Mexican-Americans. Represented disadvantaged populations.
- MODEL CHARACTERISTICS:** Anglo-American adult female
- INDEPENDENT VARIABLES:** Implicit or Explicit M Instructions; Question Classes (criteria of questions)--Nominal Physical Questions, Functional Uses Questions; Causal Relations Questions; and Value Judgments Questions; Sex
- DEPENDENT VARIABLES:** question-asking responses
- MATERIALS:** two sets (Baseline-Imitation, and Generalization) of stimulus pictures of numbers, colors, and pictorial content
- PROCEDURE:** Baseline and Imitation and Generalization phases. Ss presented with stimuli cards and told to ask questions about each card. During imitation phase, Ss observed M asking questions, receiving implicit or explicit instructions to watch and learn from M. Ss shown new cards for generalization.
- RESULTS:** Significant imitation of all question classes, and all question classes generalized to new set of stimulus cards. Only class that Control Group showed any change in was value judgments, and this change was insignificant. Pattern of change similar for all question classes. Only in nominal physical questions did explicit directions surpass implicit ones.

## 276 LANGUAGE Question-Asking

Zimmerman, B. J., &amp; Pike, E. O.

"Effects of modeling and reinforcement on the acquisition and generalization of question-asking behavior"

CHILD DEVELOPMENT, 1972, In Press

- PURPOSE:** To investigate the influence of modeling and reinforcement procedures in teaching question-asking skills to small groups of children
- SUBJECT CHARACTERISTICS:** 18 boys and 18 girls (mean age 7.5 years), predominantly Mexican-Americans, from a public school in an economically depressed neighborhood
- MODEL CHARACTERISTICS:** adult female; adult male in posttest phase
- INDEPENDENT VARIABLES:** three treatment conditions (two groups of each condition): M plus Praise; Praise only; No Model, No Praise; Sex
- DEPENDENT VARIABLES:** S's production of questions following various experimental treatments
- MATERIALS:** E read illustrated stories to experimental groups, seated informally on carpeted floor of mobile laboratory
- PROCEDURE:** Baseline taken by E reading a story to a group of Ss, then having them each ask questions about the illustrations. E either modeled question-asking and praised Ss for their questions or praised Ss for their questions. Baseline training procedures reinstated with second E. Post-test administered to Ss by having them play a question-asking game with 12 picture cards.
- RESULTS:** The question-asking behavior of disadvantaged Mexican-American second grade Ss was found readily modifiable using an adult M offering contingent praise. Lower levels of response were produced when only praise



## 276 LANGUAGE Question-Asking (Cont.)

## RESULTS:

was presented. Both conditions numerically surpassed an untreated control group's question-asking levels. Causal relationships were established between the treatment variations and S question production through a multiple baseline procedure which produced staggered increases and decreases when either treatment was instated or withdrawn respectively. Some generalization of question-asking behavior was observed when a new teacher who did not model or praise was introduced. After training, individual post-testing revealed that only the Ss who observed the M and were praised for their questions produced significantly more questions than the control group to unfamiliar stimulus cards.

## 129 LANGUAGE Generalized Imitation

Burgess, R. L., Burgess, J. M., &amp; Esveldt, K. C.

"An analysis of generalized imitation"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1970, 3 (1), 39-46

- PURPOSE:** To explore the occurrence of nonreinforced imitative responses with particular attention to the discrimination hypothesis that generalized imitation is a function of inadequate discrimination of reinforcement contingencies.
- SUBJECT CHARACTERISTICS:** three mentally retarded boys, 11-14, attending the Experimental Education Unit of Child Development and Mental Retardation Center at the University of Washington
- MODEL CHARACTERISTICS:** S number 1, E
- INDEPENDENT VARIABLES:** English-Spanish-English Order Reinforcement; Spanish-English-Spanish Order Reinforcement; Spanish Only; One Spanish Word; English Only; Reinforcement in 0 seconds, 5-20 seconds or 60-90 seconds
- DEPENDENT VARIABLES:** number of English and Spanish imitations
- MATERIALS:** verbal presentation of English and Spanish words
- PROCEDURE:** Ss exposed to a variety of conditions designed to teach them to imitate English, but not Spanish, words and designed to teach them discrimination. Second phase involved reinforcement for nonimitative behaviors with different time intervals for reinforcement.
- RESULTS:** S number one quickly stopped verbalizing Spanish words, the other two Ss immediately stopped imitating Spanish words when they observed S number one as M. When all three Ss were given reinforcement for nonimitative responses, responses eventually stopped. English imitation rose to 100% when reinforcement for English words reintroduced.

247 Schroder, G. L., & Baer, D. M.

"Effects of concurrent and serial training on generalized vocal imitation in retarded children"

DEVELOPMENTAL PSYCHOLOGY, 1972, 6 (2), 293-301

**PURPOSE:** To investigate the efficiency of shaping verbal imitation concurrently

**SUBJECT CHARACTERISTICS:** 2 retarded 8 year old girls

**MODEL CHARACTERISTICS:** adult

**INDEPENDENT VARIABLES:** Concurrent Training; Trained Items; Serial Training; Untrained Probe Items; Reinforcement

**DEPENDENT VARIABLES:** number of trials to reach criterion, generalization of accurate imitation to untrained responses

**MATERIALS:** verbal responses of the M

**PROCEDURE:** Ss were conditioned by operant shaping technique to imitate verbal items. Ss were reinforced for increasingly accurate imitations of the training items. Training was done alternately by a serial method (one item was trained before the next item was introduced), and the concurrent method (three items were trained at the same time). After reaching criterion on each training procedure continuous reinforcement was changed to an intermittent schedule. The untrained, unreinforced probe items were introduced among the trained items.

**RESULTS:** No significant difference in the number of trials to criterion with the serial or concurrent training procedure. Increase in probe (untrained responses) was significantly greater following concurrent training than serial training.

## 248 LANGUAGE Generalized Imitation

Schumaker, J., &amp; Sherman, J. A.

"Training generative verb usage by imitation and reinforcement procedures"

JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1970, 3 (4), 273-287

- PURPOSE:** To assess effect of imitation training and reinforcement on production of correct verb forms.
- SUBJECT CHARACTERISTICS:** Three mentally retarded patients at the Kansas Neurological Institute. One male moderately retarded; one female, diagnosed as culturally familial retarded; and one female diagnosed as retarded because of prenatal maternal disease.
- MODEL CHARACTERISTICS:** adult
- INDEPENDENT VARIABLES:** M; Reinforcement
- DEPENDENT VARIABLES:** S to respond with correct tense of stimulus verb
- MATERIALS:** list of verbs having simple /-ed/ or /-ted/ endings or with /-ting/ or /-ding/ endings
- PROCEDURE:** Ss were trained to produce past tense and gerund (-ing) forms of verbs by using modeling-imitation. Verbs were trained using intensive trials (12 or more consecutive trials) until the S was able to produce the correct forms. Then, probe sessions were initiated interspersing the trained verbs with untrained verbs having the same tense forms. In the case of one S, unable to distinguish between "Now" and "Yesterday", the verbal cues were as follows: "Paint. Yesterday..." For the other Ss, the verbal cues were: "Now the man is painting. Yesterday he \_\_\_\_?" If S responded correctly, he received verbal praise and a poker chip.
- RESULTS:** With imitation training, retarded children were able to produce correct verb forms, and to generalize these correct forms to untrained verbs. They were also able to distinguish between inflectional classes of verbs (e.g., /-ted/ vs. /-ded/ past tense verbs).

## 131 COGNITIVE Rule-Learning

Cheyne, J. A.

"Effects of imitation of different reinforcement combinations to a model"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 12, 258-269

- PURPOSE:** To determine the effects of different feedback combinations to a M on the tendency of an observer to match behavior of a peer M.
- SUBJECT CHARACTERISTICS:** 30 third grade children
- MODEL CHARACTERISTICS:** same sex peer
- INDEPENDENT VARIABLES:** Right-Wrong Feedback; Right-Blank Feedback; Blank-Wrong Feedback
- DEPENDENT VARIABLES:** items correct if "right" in Right-Wrong and Right-Blank conditions or "blank" in Blank-Wrong condition
- MATERIALS:** mobile laboratory, 18 word pairs from second grade reader on 18 slides
- PROCEDURE:** S seated by M, E instructed M to say one of words from pair appearing on screen. Right-Wrong M told when right or wrong. Right-Blank, M told when right. Blank-Wrong, M told when wrong. M left. S presented with the 18 pairs, asked to tell which he thought was right, no feedback. Third trial, S asked to tell word that M had said, no feedback.
- RESULTS:** S tended to match more of M's responses when some of M's responses were perceived as right. There was a generalized matching or "halo effect" in conditions with "right" items. "Right" and "wrong" items (feedback) were recalled more than neutral or "blank" items.

## 155 COGNITIVE Rule-Learning

Hamm, N. H., &amp; Hoving, K. L.

"Conformity in children as a function of grade level, and real versus hypothetical adult and peer models"

JOURNAL OF GENETIC PSYCHOLOGY, 1971, 118, 253-263

**PURPOSE:** To assess the relative importance of hypothetical and real Ms of peer and adult age.

**SUBJECT CHARACTERISTICS:** boys and girls in grades two, five, eight and eleven

**MODEL CHARACTERISTICS:** peer and adult

**INDEPENDENT VARIABLES:** Peer or Adult Hypothetical M; Peer or Adult Real M; Age

**DEPENDENT VARIABLES:** measure of conformity to M's responses

**MATERIALS:** answering apparatus to measure conformity

**PROCEDURE:** Ss presented with cognitive task. Ss given hypothetical or real, peer or adult standards. Measure of conformity to M's responses taken.

**RESULTS:** Younger Ss tended to conform more to an adult M while older Ss tended to conform more toward a peer M.

## 187 COGNITIVE Rule-Learning

Liebert, R. M., &amp; Swenson, S. A.

"Abstraction, inference, and the process of imitative learning"

DEVELOPMENTAL PSYCHOLOGY, 1971, 5 (3), 500-504

**PURPOSE:** To assess level of attainment and generalization of rule-governed choices.

**SUBJECT CHARACTERISTICS:** normal, middle class boys and girls in first grade

**MODEL CHARACTERISTICS:** adult female

**INDEPENDENT VARIABLES:** Rule; No Rule; Sex

**DEPENDENT VARIABLES:** response latency; ability to infer correct response

**MATERIALS:** slides of objects (one large object and two small objects). presented to S for choice

**PROCEDURE:** S entered room, and watched M make choices of the objects in the slides. During the generalization phase, Ss were to try to predict what answers the M would make. During generalization phase, S was shown second set of slides, and asked to guess which ones the M had picked earlier.

**RESULTS:** Ss given the rule treatment were better able to predict the M's choices on set B than those who had been given the random selection treatment. Both boys and girls performed equally as well.

## 202 COGNITIVE Rule-Learning

McDavid, J. W.

"Effects of ambiguity of imitative cues upon learning by observation"

JOURNAL OF SOCIAL PSYCHOLOGY, 1964, 62, 165-174

- PURPOSE:** To explore the effects of cue ambiguity upon observational learning.
- SUBJECT CHARACTERISTICS:** 18 boys and 14 girls from 48-62 months enrolled in a laboratory preschool
- MODEL CHARACTERISTICS:** adult, same sex as S
- INDEPENDENT VARIABLES:** M; No M; M Responding Correctly all the time (Condition 100); M Responding Correctly 2/3 of the time (Condition 67); M Responding Correctly 1/3 of the time (Condition 33); Sex
- DEPENDENT VARIABLE:** number of correct responses S made by choosing yellow cue
- MATERIALS:** complex button-pressing box with six color-position arrangements of yellow, green and red. Box dispensed marbles for correct response which were to be traded for toys.
- PROCEDURE:** M and S alternated for 24 trials. Yellow was always correct response. Condition 100—M always chose correct response (yellow button). Condition 67—M responded four out of six times to yellow cue. Condition 33—M responded one third of the time to correct yellow cue. Control had no M.
- RESULTS:** Mean number of correct responses were the same for Condition 100 and 33, color discrimination learning easier and clear than for Condition 67. The latter was higher, but not significantly so than the Control group. Frequency of imitation remained stable for Group 33, meaning that 67 Ss tended to imitate blindly, but were more discriminatory in Group 33.



## 232 COGNITIVE Rule-Learning

Rosenthal, T. L., Alford, G. S., & Rasp, L. M.

"Concept attainment, generalization, and retention through observation and verbal coding"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1972, 13, 183-194

- PURPOSE: To assess effect of the level of information (high, low, high plus rule) on attainment and generalization of a modeled concept.
- SUBJECT CHARACTERISTICS: 80 second grade boys and girls from low SES area of Tucson, Arizona
- MODEL CHARACTERISTICS: adult female
- INDEPENDENT VARIABLES: Silent M; Low Information Code; High Information Code; High Code Plus Rule; Control
- DEPENDENT VARIABLES: Ss to choose correct color objects in response to a conceptual rule.
- MATERIALS: compartmentalized box used in game of choosing and moving objects
- PROCEDURE: Experimental groups watched or watched and listened to M as she played the game. When the M gave the information code, she made statements of different levels of instruction as to how she was playing the game and making her decisions and choices. One of the conditions included the actual rule that she was playing the game by, which was a color-governed rule choice of each object class in each color.
- RESULTS: No main effect for retest expectations. The high verbal code no rule Ss outperformed all other groups. There was no significant effects for the high verbal code plus rule groups.

## 240 COGNITIVE Rule-Learning

Rosenthal, T. L., &amp; Zimmerman, B. J.

"Organization, observation, and guided practice in concept attainment and generalization"

unpublished manuscript, University of Arizona, 1972

- PURPOSE:** To study the effects of degrees of organization in presenting stimuli, and training through modeling versus guided practice on a dial-reading concept, for two age levels of children.
- SUBJECT CHARACTERISTICS:** 36 third grade boys and 36 third grade girls (mean age 8.7 years), and an equal number of fifth grade boys and girls (mean age 10.7 years), from mixed Chicano and Anglo-American lower middle class public schools
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** M; Guided Practice; M plus Guided Practice; No M No Guided Practice; Low, Medium or High Organization of Stimulus; Sex
- DEPENDENT VARIABLES:** S's acquisition of rule governing task
- MATERIALS:** two sets of twelve cards with a geometric shape and arrow in one of six colors used as dial-reading task, six sets of colored spools
- PROCEDURE:** The task was to pick the correct number and color of spools to correspond with arrow's position and color. Baseline was taken of S's spool choices. S either watched M performed the task, had M take S's hand and was guided in her spool choices, had M and guided practice, or neither M nor guided practice. S then performed alone with first and then second set of stimulus cards.

## 240 COGNITIVE Rule-Learning (Cont.)

## RESULTS:

Full stimulus organization created substantially stronger acquisition but no better transfer; all organization levels performed comparably in generalization, supporting the dictum that intratask interference may facilitate intertask transfer. Vicarious training produced comparable learning among both grades and accounted for over twice as much dependent measure variance as did direct guided practice, which interacted with grade level.

## 271 COGNITIVE Rule-Learning

Williams, M. L., & Willoughby, R. H.

"Observational learning: The effects of age, task difficulty and observer's motoric rehearsal"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1971, 12, 146-156

**PURPOSE:** To investigate the role of motoric activity in observational learning.

**SUBJECT CHARACTERISTICS:** 44 sixth graders from Amherst, Massachusetts elementary school

**MODEL CHARACTERISTICS:** no information

**INDEPENDENT VARIABLES:** Observational Condition: Active and Passive; Length of Paired Associate List: Short and Long; Grade Level: fourth and sixth

**DEPENDENT VARIABLES:** reproducing letter-pattern pairs

**MATERIALS:** stimulus items were letters, response items were connected-dot pattern not resembling any of the letters

**PROCEDURE:** Ss received either short or long list of letters and either watched M do entire letter-pattern list before reproducing pattern with stylus (Passive) or rehearsed after each pair that M demonstrated (Active). Ten trials. Ss then took test to reproduce all pairs. Group experiment.

**RESULTS:** Performance improved with age, performance better on the short list, and active participation of response items by Ss resulted in slower learning than passive observation.

## 274 COGNITIVE Rule-Learning

Zimmerman, B. J., &amp; Bell, J. A.

"Observer verbalization and abstraction in vicarious rule learning, generalization, and retention"

DEVELOPMENTAL PSYCHOLOGY, In Press

## PURPOSE:

To examine the effects of observer verbalization on the vicarious learning by children of an abstract or an associative conceptual rule.

## SUBJECT CHARACTERISTICS:

42 boys and 42 girls from 9.3 to 12.2 years

## MODEL CHARACTERISTICS:

adult female M and male E served during training procedures; a different female E collected the delayed data

## INDEPENDENT VARIABLES:

Associative Rule; Conceptual Rule; Verbal Description; Passive Observation; Irrelevant Verbalization; Sex

## DEPENDENT VARIABLES:

S's cognition of a rule governing task performance

## MATERIALS:

12 cards with a geometric shape and colored arrow drawn in one of four directions from the shape, arrow in one of three colors, three sets of colored spools

## PROCEDURE:

Two rules for the game were used-- Associative, relationship between arrow positions was arbitrary, or Conceptual, systematic clockwise relationship in arrow positions. M demonstrated the game as S watched passively, described M's actions, or counted as M performed. S then played alone with both sets of stimuli. Ss retested three weeks later.

## RESULTS:

Ss who passively observed a M perform evinced significantly more acquisition of either rule studied than S who actively

## 274 COGNITIVE Rule-Learning (Cont.)

## RESULTS:

described the M's behavior or were engaged in irrelevant counting during observational learning. The latter two groups displayed statistically indistinguishable levels of rule acquisition. Ss who were exposed to the abstract rule demonstrated significantly more generalization and retention than did Ss who learned the associative rule.

## 277 COGNITIVE Rule-Learning

Zimmerman, B. J., &amp; Rosenthal, T. L.

"Concept attainment, transfer and retention through observation and rule-provision"

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY, 1972, In Press

- PURPOSE:** To investigate the effects of observing a M and of providing a response rule on the learning, transfer and retention of a cognitive task.
- SUBJECT CHARACTERISTICS:** 72 boys and 72 girls, third grade, middle-income, Anglo-American
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** M; No M; Rule; No Rule
- DEPENDENT VARIABLES:** concept attainment measured by correct spool choices
- MATERIALS:** stimulus cards with colored geometric shapes. The rule for spool choice was coordinated with color of shape and spool and the direction of an arrow on each geometric shape.
- PROCEDURE:** Ss picked spools for each card in the set one stimulus cards. Ss were given one of four conditions using the same stimulus set of cards. In one group the S proceeded as in baseline with No M and No Rule. In another condition the S observed the M who performed the task correctly. In a third condition the S was told the rule. In the fourth condition the S saw the M and was told the rule. Ss were then given their turn on the same set of stimulus cards. Generalization, the Ss were given set two of the stimulus cards and told to pick spools with no further training. Retention, after six weeks a new E ran the Ss with set three of the stimuli cards with no further training.

## 277 COGNITIVE Rule-Learning (Cont.)

## RESULTS:

ss profited both from modeling and rule provision. The strongest learning, transfer and retention were in the M plus rule learning group. Sequence in presenting the sets of retention stimuli did not influence the strength of concept retention.



## 279 COGNITIVE Rule-Learning

Zimmerman, B. J., &amp; Rosenthal, T. L.

"Observation, repetition, and ethnic background in concept attainment and generalization"

CHILD DEVELOPMENT, 1972, 43, In Press

- PURPOSE:** Using several variations of modeling procedures, to determine the effects of these variations with comparative samples of minority and majority ethnic groups with similar socioeconomic backgrounds.
- SUBJECT CHARACTERISTICS:** 32 boys and 32 girls from Mexican-American families, and a like number of Anglo-American families; mean age 10.7 years.
- MODEL CHARACTERISTICS:** adult male E and adult female M
- INDEPENDENT VARIABLES:** Mexican-American S; Anglo-American S; M plus Repetition; M without Repetition; No M with Repetition; No M, No Repetition; Sex
- DEPENDENT VARIABLES:** S's acquisition (cognition) of rule governing selection of correct stimulus form
- MATERIALS:** two sets of 12 stimulus cards, set one had six forms, using three geometric shapes in three colors on each card with notches randomly placed on two forms per card as distractors, and a dot on one large and one small form with two different numbers underneath, the second set had different colors and shapes.
- PROCEDURE:** Baseline taken with S guessing which shape was right on each card. All Ss given instructions about the game rule. Ss with M saw M demonstrate the game with E repeating or not repeating the rule with each card. S played the game with E

## 279 COGNITIVE Rule-Learning (Cont.)

## PROCEDURE:

giving feedback. S played with new set of stimulus cards without feedback.

## RESULTS:

Both M and Repetition improved performance. Prior M groups reduced errors faster than Non M groups, whose errors decreased in the last block of trials. Concept generalization was aided by M and especially, by repetition which mainly determined later verbalization of the rule. Anglo-outperformed Mexican-American Ss, but the major results held for both ethnic groups.

## 238 COGNITIVE Conservation

Rosenthal, T. L., &amp; Zimmerman, B. J.

'Modeling by exemplification and instruction in training conservation'

DEVELOPMENTAL PSYCHOLOGY, 1972, 6 (3), 392-401

- PURPOSE:** To assess effects of modeling and instruction on training conservation.
- SUBJECT CHARACTERISTICS:** Experiment I: 50 girls and 50 boys from first grade, middle class. Experiment II: 17 children (selected because they conserved correctly in pretrials. Experiment III: 28 Chicano Ss. Experiment IV: 7 boys and 6 girls, ages 4.2 to 4.9 years
- MODEL CHARACTERISTICS:** female adult Anglo
- INDEPENDENT VARIABLES:** Race of S; Age; M; Rule Provision; Vicarious or No Reinforcement; Sex
- DEPENDENT VARIABLES:** response on conservation tasks modeled to Ss
- MATERIALS:** Goldschmid and Bentler measures of generalized conservation Form A was administered in baseline, while Form B was given during generalization phase.
- PROCEDURE:** During pretest, Ss were assessed to determine their level of conservation prior to training. If a S conserved correctly on five items, he was assigned to the M non-conservation group. Half of the Ss were assigned to the M plus Rule group in which the M explained why the items weren't different. Feedback effects were studied by having the E reinforce the M after successful trials. For the judgments only group, the M made equivalence judgments for each items, varying her verbal statements to avoid repetition. In Experiment II, Ss were those children who had conserved during baseline trials. These Ss were exposed to a M who did not

## 238 COGNITIVE Conservation (Cont.)

## PROCEDURE:

conserve. For the judgments, the M stated their inequality. There was no explanation for the judging of stimulus members to be unequal. If these Ss had given acceptable reasons during baseline, their reasons became less clear during these trials. Experiment III Ss were lower SES Mexican-American children. These Ss were exposed to the modeling treatment above, rule provision with no feedback. The Ss were also exposed to an instructions only treatment, where the E told the S that the stimulus members were the same, after they were presented already transformed.

## RESULTS:

Modeling with reinforcement to the M and rule provision did not have significant effects. However, modeling groups did significantly exceed the control groups. In the judgments plus rule treatment each group exceeded its own baseline scores. The preschool Ss did not verbalize adequate explanations, thus indicating that the linguistic components of conservation were not present in their repertoire. For the Mexican-American Ss, the modeling groups exceeded the instructions groups.

278 ZIMMERMAN, B. J., & Rosenthal, T. L.

"Conserving and retaining equalities and inequalities through observation and correction"

Unpublished manuscript, University of Arizona, 1972

- PURPOSE:** To test the effect of live and symbolic modeling on the conservation of equalities and inequalities.
- SUBJECT CHARACTERISTICS:** predominantly lower middle class, Anglo-American kindergarten children, 24 boys and 24 girls
- MODEL CHARACTERISTICS:** adult female, Anglo-American
- INDEPENDENT VARIABLES:** Sex; M; No M; Verbal Correction; No Verbal Correction
- DEPENDENT VARIABLES:** correct judgments (judgments only), judgments plus explanations (judgments plus rule), logical reversibility
- MATERIALS:** three sets of stimulus items, each set representing equal and unequal length, number and two-dimensional space
- PROCEDURE:** Ss tested individually over period of days. Baseline tested whether or not S could conserve. If not, S brought back next day for training. M and S alternated with M giving explanations for her decisions. Verbal Correction: E gave corrective feedback plus positive verbal reinforcement for correct answer. M and Correction- S first observed M, S given feedback and reinforcement. Control- No M, No Corrective Feedback. Third set of stimulus items then presented for generalization without M or feedback. S then tested to see if S could reverse logical operations (Logical Reversibility) by showing that transformed items were still the same, moving them back to their original shape. Retention with baseline items given one week later.

## 278 COGNITIVE Conservation)

## RESULTS:

No significant sex effects. Judgments only- Modeling plus Correction was strongest in Training, next strongest group was Correction which was not significantly different from Modeling plus Correction in other phases. All Experimental Ss showed some learning. Judgments plus Rule produced similar results. Logical Reversability- Experimental Ss did not significantly differ from each other.

## 142 COGNITIVE Discrimination

Fernandez, L. E., &amp; Liebert, R. M.

"Vicarious reward and task complexity as Determinants of imitative learning: A modified replication"

PSYCHOLOGICAL REPORTS, 1970, 26, 473-474

**PURPOSE:** Effects of vicarious reward and task complexity on imitative learning.

**SUBJECT CHARACTERISTICS:** 108 preschool girls from a summer nursery school program

**MODEL CHARACTERISTICS:** adult female

**INDEPENDENT VARIABLES:** Vicarious Reward; No Vicarious Reward; No M; High or Low-Task-Complexity

**DEPENDENT VARIABLES:** correct identification of states

**MATERIALS:** eight colored slides each depicting three U. S. states

**PROCEDURE:** S observed M identify one of states for each slide and be rewarded or not rewarded. S with M told that M had gotten all her answers correct. S then told to point out correct state and was rewarded for right response with a token.

**RESULTS:** Exposure to M has significant effect on learning. Vicarious-Reward had a slightly positive effect.

## 143 COGNITIVE Discrimination

Flanders, J. P., &amp; Thistlewaite, D. L.

"Effects of vicarious reinforcement, verbalization, and task difficulty upon imitation"

Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 3, 395-396

**PURPOSE:** To investigate the effects of vicarious reinforcement, task difficulty and degree of verbalization by the M on imitation.

**SUBJECT CHARACTERISTICS:** boys, 11-13

**MODEL CHARACTERISTICS:** peer boys

**INDEPENDENT VARIABLES:** Vicarious Reinforcement (Feedback); Nonreinforcement; Verbalization; No Verbalization; Task Difficulty

**DEPENDENT VARIABLES:** comprehension and imitation of M's solution

**MATERIALS:** two discrimination tasks

**PROCEDURE:** S observed M with easy or difficult discrimination task in which M received or did not receive feedback to his responses, and M verbalized or silently made his choice. S given questionnaire to test his comprehension.

**RESULTS:** Verbalization and the Difficult-Task increased comprehension. Verbalization and Vicarious Reinforcement increased imitation.



## 181 COGNITIVE Discrimination

Liebert, R. M., &amp; Fernandez, L. E.

"Vicarious reward and task complexity as determinants of imitative learning"

PSYCHOLOGICAL REPORTS, 1969, 25, 531-534

**PURPOSE:** To test the hypothesis that vicarious reward may serve initially to enhance the observer's attention to the M's behavior, as well as to provide them with information by which to guide their own future actions, and that such observed consequences would be expected to enhance the effects of direct reward increasingly as the modeled task increases in complexity.

**SUBJECT CHARACTERISTICS:** 18 boys and 18 girls, 6-7 years old, from middle class public school

**MODEL CHARACTERISTICS:** adult female

**INDEPENDENT VARIABLES:** Task Complexity, Vicarious or No Vicarious Reward

**DEPENDENT VARIABLES:** imitation of the M's responses by correctly pointing to target state for each slide

**MATERIALS:** nine color slides, each of which labeled and depicted three U.S. states

**PROCEDURE:** Task consisted of identifying one of three states shown on a slide with the states being named. S was given three, six or nine slides to identify states. S then observed M correctly identify states, and be praised and rewarded for or receive no comment on her choice. S then asked to go through slides again, identifying M's choice. Matching responses were rewarded.

## 181 COGNITIVE Discrimination (Cont.)

## RESULTS:

Performance was inversely related to complexity. Also, vicarious reward served to increase the number of correct matching responses. Vicarious reward had a significant effect for Ss in the high-complexity condition, tended to enhance the performance of Ss in the moderate-complexity condition, and had only negligible effects for Ss exposed to the low-complexity task. (Using same materials, a comparably retested control group was tested, and showed that the exposure was durable for at least three weeks).

## 188 COGNITIVE Discrimination

Liebert, R. M., &amp; Swenson, S. A.

"Association and abstraction as mechanisms of imitative learning"

DEVELOPMENTAL PSYCHOLOGY, 4 (2), 289-294

- PURPOSE:** To assess the level of imitation of rule-governed choices.
- SUBJECT CHARACTERISTICS:** boys and girls, middle and lower class preschool, Black and white
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** Rule; No Rule; Sex; Number of Modeled Responses (6 or 18)
- DEPENDENT VARIABLES:** number of modeled responses correctly recalled by Ss and latency of each response
- MATERIALS:** slides of objects (one large object and two small objects) presented to S for choice
- PROCEDURE:** S entered room and watched M select objects presented on a screen. After M finished, S told that he could also select objects. S was timed on latency between presentation and selection by M. The S's correct choices were rewarded with a token which could later be exchanged for gifts and toys. In the Rule treatment, M selected the large item all the time. In the No Rule treatment, there was no common element for selection of items. Ss were randomly assigned to the "number of items" treatment.
- RESULTS:** Ss were able to internalize the rule governing the choices of the M. However, it was also found that these effects were more significant for Ss who were assigned to the 18 choice treatment rather than the 6 choice treatment.

## 203 COGNITIVE Discrimination

McDavid, John W.

"Imitative behavior in preschool children"

PSYCHOLOGICAL MONOGRAPHS, 1959, 73 (16)

- PURPOSE:** To explore individual difference in the process of acquiring an "imitation habit", in terms of both individual difference in performance in the laboratory, and relationships between child rearing antecedents and observed imitative behavior in young children.
- SUBJECT CHARACTERISTICS:** 32 upper middle class nursery school children, mean age 54.6 months
- MODEL CHARACTERISTICS:** adult male or female E, counterbalanced by adult male or female M
- INDEPENDENT VARIABLES:** Sex of S; Sex of M; Age; Irrelevant Color Cues; Position Cues
- DEPENDENT VARIABLES:** imitative (rewarded) response, i.e., S making correct motor imitation choice response
- MATERIALS:** two box-type apparatuses with colored doors and lights, one designated as Problem Box, the other as Report Box, M&M behind correct door
- PROCEDURE:** S and M played together. E would hide a candy in one compartment of Problem Box and M was to guess first which door it was behind. The light would come on over the corresponding door when M made choice. S was instructed to watch the Report Box while M took his turn, being told that the color of the light that came on was the color of door M had chosen. S took his turn at the Problem Box with M watching the Report Box. S and M told not to tell each other whether not they found the candy until the end of the game.

## 203 COGNITIVE Discrimination (Cont.)

## RESULTS:

There was a preponderant tendency toward nonimitation on the initial task. Total imitative response data analysis revealed that the learning of the imitative response occurred over the training series.

## 243 COGNITIVE Discrimination

Kobasigawa, D., &amp; Kobasigawa, A.

"Effects of exposure to models on concept identification in kindergarten and second-grade children"

CHILD DEVELOPMENT, 1971, 42, 951-955

## PURPOSE:

To study younger children who were required to learn a concept identification problem from a M who performed different or similar problems and to examine the effect of the presence or absence of the M's verbalization of the cues guiding his behavior on subsequent learning.

## SUBJECT CHARACTERISTICS:

49 kindergarten, 47 second grade children, drawn from two lower middle class public schools

## MODEL CHARACTERISTICS:

live

## INDEPENDENT VARIABLES:

Verbal M; Silent M; No M; Age

## DEPENDENT VARIABLES:

mean number of errors in choosing the correct discrimination picture

## MATERIALS:

two sets of discrimination cards with colored geometric stimuli

## PROCEDURE:

Ss given a dimension preference test and chosen as Ss if they showed a consistent dimension preference. S observed M play game by guessing which of two geometric shapes on the card E was thinking about. M consistently chose a value not in S's preferred dimension. M verbalized his choice or pointed to it. E verbally reinforced the M. S given second set of cards, S given feedback, reinforced for choosing response outside of his dimension preference.

## RESULTS:

Second graders made significantly more errors in the silent M condition than kindergarteners. In the kindergarten group, the verbal M group and the silent

243 COGNITIVE Discrimination (Cont.)

RESULTS:

M group made significantly fewer errors than the no M group. In the second grade group the verbal M group made significantly fewer errors than the silent M and no M group.

## 272 COGNITIVE Discrimination

Wilson, W. C.

"Imitation and the learning of incidental cues by preschool children"

CHILD DEVELOPMENT, 1958, 29 (3), 393-397

- PURPOSE:** To study the performance of the imitative response in an appropriate situation in the absence of a M.
- SUBJECT CHARACTERISTICS:** 14 boys and 12 girls from upper middle class Boston nursery school, median I.Q. of 130. Ages from 3 years 7 months to 4 years 10 months
- MODEL CHARACTERISTICS:** adult female
- INDEPENDENT VARIABLES:** M; No M; Sex
- DEPENDENT VARIABLES:** measure of correct responses in choosing container with candy; Criterion- five consecutive correct answers
- MATERIALS:** two containers of same volume and height, one a black, rectangular shape and the other a red cylinder; containers placed on children's chairs; candy
- PROCEDURE:** Experimental Group Pretraining (Modeling) Initially used identical boxes. S and M alternated choosing container, one containing candy as reinforcement for correct response. Same correct response for S and M. When S learned to go to the same box as M, E used the two different boxes with M and S for eight more trials, same container always correct. Discrimination Problem- Ss played same game with the two containers, No M, correct response meant candy. Same container always correct.
- RESULTS:** Experimental group learned correct container responses significantly faster than control group which made more errors.



## 193 COGNITIVE Maze Studies

Luchins, A. S., &amp; Luchins, E. H.

"Einstellung effect in social learning"

JOURNAL OF SOCIAL PSYCHOLOGY, 1961, 55, 59-66

- PURPOSE:** To determine the length of time it takes a S to verbalize a correct rule in a maze-choice task.
- SUBJECT CHARACTERISTICS:** 30 college students
- MODEL CHARACTERISTICS:** adult male
- INDEPENDENT VARIABLES:** Patterned, No Patterned Principle; Imitation-Pattern; M
- DEPENDENT VARIABLES:** correct choice in maze task
- MATERIALS:** maze: cardboard house with two paths leading to it: one short, one long and winding
- PROCEDURE:** Ss exposed to several treatments: imitation problem where M responded randomly and was always correct. S called out if he responded the same way that M did; E used a random pattern, and considered the long path unblocked (correct) in first and second trials and the short path unblocked in the third trial, this pattern was used throughout the problem; a combination of the two treatments above, where either description was considered correct. Ss were exposed to trials in order: Imitation, Imitation-Pattern, Pattern. The other half of the Ss received problems in reverse order: Pattern, Imitation-Pattern, Imitation.
- RESULTS:** In the imitation problem most Ss were reluctant to verbalize the rule, and some took as many as 20 or more trials before they did so. In the Imitation-Pattern problem no S verbalized both rules; instead they verbalized whichever one they had been exposed to first. In fact, most Ss saw no difference between the first problem and the second problem.

## 194 COGNITIVE Maze Studies

Luchins, A. S., &amp; Luchins, E. H.

"Imitation by rote and by understanding"

JOURNAL OF SOCIAL PSYCHOLOGY, 1961, 54, 175-197

**PURPOSE:** Ss were to determine the "rule" governing the choices of the M.

**SUBJECT CHARACTERISTICS:** Experiment I: Ss between 11 and 13 years; Experiment II: Ss were college students 16-32 years

**MODEL CHARACTERISTICS:** peer M (Experiment I); adult male and female (Experiment II)

**INDEPENDENT VARIABLES:** Age; Abstract or Logical M

**DEPENDENT VARIABLES:** correct responses in maze task

**MATERIALS:** Maze in form of house with two paths: one short, perpendicular, the other long and winding, to the door.

**PROCEDURE:** In the imitation problem, whichever path the M selected was called correct. In short problem, M always chose short path. M varied his choices so that he was wrong part of the time. In the alternation problem, the M alternately chose the short and the long path. The M made his choice in a random fashion, and so was sometimes wrong. In the short imitation problem the short path was always right. In the alternation imitation problem an alternation system was used in determining which path was unblocked (Correct). M alternated in accordance with this system. S was to verbalize or write down the rule that he thought was correct. Experiment II the college students were asked to verbalize or write down the rule they had deduced after they had gotten five consecutive answers right. In Experiment III, the atmosphere was made more casual in an attempt to reduce the "test tension".

## 194 COGNITIVE Maze Studies (Cont.)

## PROCEDURE:

The students were permitted to talk to the E.

## RESULTS:

In Experiment I, the Ss realized what the rule was quicker when presented with the imitation problem first. If the imitation problem was presented first, the Ss tried different hypotheses and looked for cues before finally getting the idea they were supposed to imitate the M. If the imitation problem was presented second, Ss seemed to grasp the rule faster than if it was presented first. College age Ss were more reluctant to imitate than the younger Ss. Alternation problem was more readily verbalized. This was the result, perhaps, of a "school induced block against copying".

## 216 COGNITIVE Maze Studies

Patterson, G. R., Littman, I., &amp; Brown, T. R.

"Negative set and social learning"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1968, 8 (2), 109-116

- PURPOSE:** To test the hypothesis that the presence of a negative set moderates the effect of a child's observing the behavior of an adult M. Experiment I tested the assumption that negative set is a significant determinant in the outcome of modeling procedures. Experiment II tested the hypothesis that for boys adult female Ms would elicit higher negative set scores than would adult males; the assumption that the laboratory measure of negative set would show a significant decrease as a function of the age of the child.
- SUBJECT CHARACTERISTICS:** 21 first grade boys enrolled in middle class public school in Experiment I; 40 boys, 6-10, enrolled in public school in Experiment II
- MODEL CHARACTERISTICS:** adult males (Experiment II only) and adult females (both Experiments)
- INDEPENDENT VARIABLES:** M; Age; Sex of M
- DEPENDENT VARIABLES:** Imitation of M's performance and preferences, deviation from M was taken to be result of S's negative set
- MATERIALS:** maze test, picture preference test, color preference task, slide presentation
- PROCEDURE:** Baseline of picture preferences were taken. Later a baseline was taken for maze test and color preferences. One week later an estimate of S's variability in picture preferences, his negative set score, and a baseline estimate of S's rate of key tapping was taken. S was exposed to M. S again performed picture

## 216 COGNITIVE Maze Studies (Cont.)

## PROCEDURE:

and color preference, maze and key tapping tasks. Posttest taken one week later.

## RESULTS:

The data showed that negative set scores correlated negatively with scores assessing the effects of M. M tasks involving the manipulation of either complex problem-solving skills or the alternation of already well-established object preferences seemed to be most affected by negative set. In the second study older boys were shown to have lower negative set scores than younger boys.

## 228 COGNITIVE Maze Studies

Rosenbaum, M. E.

"The effect of verbalization of correct responses by performers and observers on retention"

CHILD DEVELOPMENT, 1967, 38 (3), 615-622

- PURPOSE:** To assess effects of verbalization on performance of modeled responses.
- SUBJECT CHARACTERISTICS:** 148 pupils in University of Iowa Elementary School, equally divided from grades one to six.
- MODEL CHARACTERISTICS:** peers, male and female
- INDEPENDENT VARIABLES:** Verbalization by Performer or Observer; No Verbalization; Age
- DEPENDENT VARIABLES** performance on a maze selection task
- MATERIALS:** aluminum panel 1 x 4 feet, mounted with 80 tube sockets placed 1" apart, with the keyway of each socket directionally random. A correct response choice was indicated by a green light.
- PROCEDURE:** Performers inserted stylus into hole in tube sockets to locate the one that operated the green light. As the Performers operated the panel, an Observer stood behind him, watching. In the Performer-Verbalization condition, the Performer verbalized the correct number as it turned up on the panel. In the Observer-Verbalization, the Observer verbalized the correct number. In each condition, half of the Ss were instructed to remain silent during the trials.
- RESULTS:** There was no difference between the active verbalization and the no verbalization conditions. However, the Observers who were in the active verbalization condition were those Ss who had the highest retention scores.

## 229 COGNITIVE Maze Studies

Rosenbaum, M. E., &amp; Schutz, L. J.

"The effects of extraneous response requirements on learning by performers and observers"

PSYCHONOMIC SCIENCE, 1967, 8 (2), 51-52

**PURPOSE:** To measure the effects of decision-making responsibility, participation, and level of perceptual-motor activity on retention of maze pattern.

**SUBJECT CHARACTERISTICS:** 112 male introductory psychology students

**MODEL CHARACTERISTICS:** no information

**INDEPENDENT VARIABLES:** Decision: Performer or Observer; Decision or No Decision-Making; Participation: Performer or Observer; Implements: Tube or Stylus

**DEPENDENT VARIABLES:** retention of maze pattern

**MATERIALS:** complex, multiple-choice maze of radio tube sockets operated by a readily-insertable stylus or a harder-to-insert radio tube. Correct response lighted green while red light indicated error.

**PROCEDURES:** Performers explored maze to find green light in each row of sockets. Performer or Observer made decision on which socket to try. Retention test given to Performer and Observer separately consisting of ditto sheet maze.

**RESULTS:** Superior retention in No-Decision conditions. Performer-Stylus more effective than Performer-Tube while no difference was shown with Observer and Implement, indicating interference by more complex implement on Performer. Best performances by Performer-No-Decision-Stylus and Observer-No Decision-Tube. Superior retention not shown by Observer-No-Decision-Stylus, perhaps because stylus manipulation too rapid for Observer.

## 230 COGNITIVE Maze Studies

Rosenblith, J. F.

"Learning by imitation in kindergarten children"

CHILD DEVELOPMENT, 1959, 30, 69-80

- PURPOSE:** To study the effectiveness of learning by imitation in a context which permitted examination of a number of variables relevant to learning and identification theories.
- SUBJECT CHARACTERISTICS:** 120 kindergarten children from upper middle class public schools, pretested for performance level on Porteus Mazes, with children from each of four performance levels being assigned to each of treatment conditions
- MODEL CHARACTERISTICS:** adult male and female
- INDEPENDENT VARIABLES:** Sex of Leader (M); Sex of S; Leader's Attention; Control
- DEPENDENT VARIABLES:** improvement of performance on Maze test after having observed M in training phase
- MATERIALS:** Porteus Maze Test
- PROCEDURE:** Maze test administered to determine performance level for assignment to treatment groups. S brought in again one to three weeks later. Ss with M first interacted with M playing with toys. M either played with S the whole time or withdrew attention after half of play time. M was the same or opposite sex of S. M and S then alternated maze trials until S could not do two consecutive or two out of three mazes.
- RESULTS:** In general, having a M was more effective than merely having additional trials. There were important differences between the effectiveness of the male leader and the female leader. The male leader was, in general more effective. There were



## 230 COGNITIVE Maze Studies (Cont.)

## RESULTS:

also important differences between boys and girls, with boys showing more improvement. Girls seemed less sensitive to the experimental manipulations. There was a tendency for attention to be more effective than withdrawal of attention except in the case of boys with a male leader.

## 198 COGNITIVE Creativity

Marshall, H. R., &amp; Shwu Ching Hahn

"Experimental modification of dramatic play"

JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY, 1967, 5 (1), 119-122

## PURPOSE:

To test the hypothesis that if an adult engages in fantasy play with a child, using topics commonly used in children's dramatic play with peers, the child will increase his dramatic play with peers.

## SUBJECT CHARACTERISTICS:

42 triads of preschool children (N = 36, 21 girls, 15 boys) were matched in sex, age, position in family, father's occupation, and length of attendance in nursery schools, in Philadelphia and New Mexico. Children within a triad were assigned randomly to three experimental groups. Mean age was 48.7 months, with range of 33 to 66 months.

## MODEL CHARACTERISTICS:

adult female

## INDEPENDENT VARIABLES:

Doll-Play Fantasy Training; Use of Toys Training; No Training

## DEPENDENT VARIABLES:

frequency of dramatic play before and during training

## MATERIALS:

all from Creative Playthings or Community Playthings; Doll-play toys: doll "family" and friends, car, gas station, zoo, and other "locales". Toy-training: various toys, such as Giant Magnifier, Flexible Mirror, Birds in a Tree puzzle, etc.

## PROCEDURE:

Baseline: before training, time-sample records of behavior were taken during the free-play periods at nursery school. Similar records were kept during training. "Before" and "during" training records were taken within a six-week period for each S. Training: Each child was given

## 198 COGNITIVE Creativity (Cont.)

## PROCEDURE:

at least four training sessions of 15 min. duration, one day apart, playing with either dolls or other toys with E, with E speaking to S at least once a minute during training. In Doll-play group, E initiated most activities in various fantasy "locales", for the doll family and friends. In Toy-training group, E's verbalization focused on number, color, form, etc., and avoided fantasy statements. Ss were rewarded after these sessions.

## 275 COGNITIVE Creativity

Zimmerman, B. J., &amp; Dialessi, F.

'Modeling influences on children's creative behavior'

Unpublished Manuscript, University of Arizona, 1972

- PURPOSE:** To examine a M's influence on the creative behavior of children, with attention to dimensions of fluency and flexibility.
- SUBJECT CHARACTERISTICS:** 60 boys and 60 girls, fifth graders (age range from 9.9 to 12.3 years), Ss were Anglo-Americans of lower middle class SES
- MODEL CHARACTERISTICS:** adult male M on videotape; adult male E and female assistant
- INDEPENDENT VARIABLES:** Low Fluency-Low Flexibility Creativity;  
Low Fluency-High Flexibility Creativity;  
High Fluency-Low Flexibility Creativity;  
High Fluency-High Flexibility Creativity;  
Sex
- DEPENDENT VARIABLES:** S's performance on creative tasks after having observed a M's creative performance
- MATERIALS:** four sets of responses were selected from the Torrance Tests of Creative Thinking (1966), with the M's performance systematically manipulating the number of responses and quality of responses. Each set of responses was modeled on a 90 second videotaped presentation, with M verbalizing a response every 5 seconds in the high fluency conditions, and every 15 seconds in low fluency conditions.
- PROCEDURE:** Ss were taken in groups of 10 to the experimental room, where they saw a videotaped M perform one of four experimental conditions. Phase I-Training-- "unusual uses for cardboard boxes" were modeled on videotape; immediately following Ss were asked to write down as many "unusual uses for tin cans" as they could,

## 275 COGNITIVE Creativity (Cont.)

## PROCEDURE:

and were given five minutes to complete the task (parallel generalization). Phase II- Generalization: immediately thereafter, Ss were given the "Just suppose a great fog covered the earth..." task, as a measure of stringent generalization, and were given five minutes to complete the task.

## RESULTS:

High M fluency was found to significantly increase S fluency and flexibility measures on the parallel task. A marginally significant increase in observer fluency was noted on the stringent generalization task. Contrary to predictions, increased M flexibility produced significant decreases in observer fluency and flexibility measures on both the parallel and stringent generalization tasks. All groups emitted only 2.14% mimicry responses out of total responses, and therefore it appeared that M's performance acted as a catalyst impelling Ss to generate more creative responses. M fluency increase mimicry, when it occurred, and flexibility depressed it.

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